Appendix C: Data Quality

This appendix is EPA's record of performance data reliability for each of the Agency's 2005 annual performance measures (including PART measures). It discusses data sources, methods for calculating performance, data limitations affecting uncertainty in measurement, and efforts to improve the completeness and reliability of the data and data collection systems. This appendix also describes third-party audits, studies, or evaluations of the data and recommendations for improvements.

Goal 1, Objective 1

FY 2005 PERFORMANCE MEASURES:

- SO_2 emissions reduced (tons/yr from 1980 baseline).
  Total annual average sulfur deposition and mean ambient sulfate concentrations reduced (% from baseline).
  Total annual average nitrogen deposition and mean ambient nitrate concentrations reduced (% from baseline).

Performance results related to these measures are presented in Goal 1, pages 49, 53-54.

Performance Databases:

- Emissions Tracking System (ETS)—SO_2 and NO_x emissions
- Clean Air Status and Trends Network (CASTNET)—dry deposition
- National Atmospheric Deposition Program (NADP)—wet deposition
- Temporally Integrated Monitoring of Ecosystems program (TIME)—surface water chemistry
- Long-Term Monitoring Network program (LTM)—surface water chemistry

Data Sources:

On a quarterly basis, ETS receives and processes hourly measurements of SO_2, NO_x, volumetric flow, CO_2, and other emission-related parameters from more than 3,400 fossil fuel-fired utility units affected under the Title IV Acid Rain Program. These measurements are collected by certified continuous emission monitoring systems (CEMS) or equivalent continuous monitoring methods.

CASTNET measures particle and gas acidic deposition chemistry. Specifically, CASTNET measures sulfate and nitrate dry deposition and meteorological information at approximately 88 monitoring sites, primarily in the East. Two additional sites are planned as part of a multi-year network refurbishment and modernization project. These sites are scheduled to be in operation by 2007 and will help fill the coverage gap in the middle of country. CASTNET is a long-term dry deposition network funded, operated and maintained by EPA's Office of Air and Radiation (OAR). The National Park Service operates approximately 30 of the monitoring stations in cooperation with EPA.

NADP is a national long-term wet deposition network that measures precipitation chemistry and provides long-term geographic and temporal trends in concentration and deposition of precipitation components. Specifically, NADP provides measurements of sulfate and nitrate wet deposition at approximately 255 monitoring sites. EPA, along with several other Federal agencies, states, and private organizations, provide funding and support for NADP. The Illinois State Water Survey/University of Illinois maintains the NADP database.

The deposition monitoring networks have been in operation for over 25 years. They provide invaluable measurements on long-term trends and episodes in acid deposition; such data are essential for assessing progress toward the program's intended environmental outcomes. These networks need to be modernized to ensure the continued availability of these direct environmental measures. Maintaining a robust long-term atmospheric deposition monitoring network is critical for the accountability of the Acid Rain and Clean Air Interstate Rule (CAIR) Programs (and/or Clear Skies if new legislation is enacted).

The TIME project measures surface water chemistry and is based on the concept of a probability sample, where each site is chosen to be statistically representative of a target population. In the Northeast (New England and the Adirondacks), this target population consists of lakes likely to be responsive to changes in rates of acidic deposition (i.e., those with Gran ANC < 100 ìeq/L). In the Mid-Atlantic, the target population is upland streams with a high probability of responding to changes in acidic deposition (i.e., Northern Appalachian Plateau streams with Gran ANC < 100 ìeq/L). Each lake or stream is sampled annually (in summer for lakes, in spring for streams), and results are extrapolated to the target population. The most recent (2003) TIME trends analysis reported data from 43 Adirondack lakes, 30 New England lakes, and 31 Appalachian Plateau streams.

The TIME project goals are to determine not only how a representative sample of water bodies is changing through time, but also whether the proportion of the population that is acidic has changed. The project is operated cooperatively with numerous collaborators in state agencies,

academic institutions and other federal agencies.

The LTM project complements TIME's statistical approach to sampling lakes and streams. LTM samples a subset of sensitive lakes and streams with long-term data, most dating back to the early 1980s. These sites are sampled 3 to 15 times per year. This information is used to characterize how the most sensitive aquatic systems in each region are responding to changing deposition, as well as providing information on seasonal chemistry and episodic acidification. In most regions, a small number of higher ANC (e.g., GranANC >100 ìeq/L) sites are also sampled, and help separate temporal changes due to acidic deposition from those attributable to other disturbances such as changes in land use. The most recent (2003) LTM trends analysis reported data from 48 Adirondack lakes, 24 New England lakes, 9 Northern Appalachian Plateau streams, and 69 streams in the Blue Ridge region of Virginia and West Virginia. The project is operated cooperatively with numerous collaborators in state agencies, academic institutions and other federal agencies.

Methods, Assumption, and Suitability:

Promulgated methods are used to aggregate emissions data across all United States' utilities for each pollutant and related source operating parameters such as heat input.

QA/QC Procedures:

Promulgated QA/QC requirements dictate performing a series of quality assurance tests of CEMS performance. For these tests, emissions data are collected under highly structured, carefully designed testing conditions, which involve either high quality standard reference materials or multiple instruments performing simultaneous emission measurements. The resulting data are screened and analyzed using a battery of statistical procedures, including one that tests for systematic bias. If a CEM fails the bias test, indicating a potential for systematic underestimation of emissions, the source of the error must be identified and corrected or the data are adjusted to minimize the bias. Each affected plant is required to maintain a written QA plan documenting performance of these procedures and tests. Further information is available at: http://www.epa.gov/airmarkets/reporting/index.html.

CASTNET established a Quality Assurance Project Plan (QAPP) in November 2001; The QAPP contains data quality objectives and quality control procedures for accuracy and precision. {U.S. EPA, Office of Air Quality Planning and Standards, *Clean Air Status and Trends Network (CASTNet) Quality Assurance Project Plan* (Research Triangle Park, NC: U.S. EPA, November 2001). In addition, the program publishes annual quality assurance reports. Both the CASTNET QAPP and 2003 Annual Quality Assurance Report may be found at www.epa.gov/castnet/library.html.

NADP has established data quality objectives and quality control procedures for accuracy, precision and representation, available on the Internet: nadp.sws.uiuc.edu/QA/. The intended use of these data is to establish spatial and temporal trends in wet deposition and precipitation chemistry.

For TIME and LTM, the field protocols, laboratory methods, and quality assurance procedures are specific to each research group. QA/QC information is contained in the cited publications of each research group and compiled in Newell et al. (1987). The EMAP and TIME protocols and quality assurance methods are generally consistent with those of the LTM cooperators, and are detailed in Peck (1992) and in Table 3 of Stoddard et al (2003).

Data Quality Review:

The ETS provides instant feedback to sources on data reporting problems, format errors, and inconsistencies. The electronic data file QA checks are described at www.epa.gov/airmarkets/reporting/index.html (see *Electronic Data Report Review Process, ETS Tolerance Tables, Active ETS Error Codes/Messages and Range Format Errors*). All quarterly reports are analyzed to detect deficiencies and to identify reports that must be resubmitted to correct problems. EPA also identifies reports that were not submitted by the appropriate reporting deadline. Revised quarterly reports, with corrected deficiencies found during the data review process, must be obtained from sources by a specified deadline. All data are reviewed, and preliminary and final emissions data reports are prepared for public release and compliance determination.

CASTNET underwent formal peer review in 1997 by a panel of scientists from EPA and the National Oceanographic Atmospheric Administration (NOAA). Findings are documented in *Examination of CASTNET: Data, Results, Costs, and Implications* (United States EPA, Office of Research and Development, National Exposure Research Laboratory, February 1997).

The NADP methods of determining wet deposition values have undergone extensive peer review; this process has been managed by NADP program office at the Illinois State Water Survey/University of Illinois. Assessments of changes in NADP methods are developed primarily through the academic community and reviewed through the technical literature process.

The TIME and LTM data used in EPA trends analysis reports are screened for internal consistency among variables, including ion balance and conductance balance. Samples with unexplained variation in these variables are deleted. Sites with mean Gran ANC greater than 200 ìeq/L also are deleted. EPA trends analyses exclude sites with chloride values that are outliers in their region, because high Cl- is typically associated with human development in the watershed. The Cl- and associated Na+ would alter normal soil ion exchange relationships, thus obscuring the response to acidic deposition.

Data Limitations:

In order to improve the spatial resolution of CASTNET, additional monitoring sites are needed, particularly in the middle of the country.

New/Improved Data or Systems:

The program plans to modernize and enhance CASTNET to ensure network viability and enhance the monitoring capacity to support ongoing and future accountability needs, particularly relating to long range pollutant transport. The refurbishment of CASTNET will result in more comprehensive air quality data and information, made available faster by enabling real-time access to air quality information and promoting integration with other networks through

regional/rural monitoring strategies. Refurbishment activities to be pursued in FY 2007 include: (1) completion of a pilot phase study to evaluate options for upgrading CASTNET with new advanced measurement instrumentation; (2) selection and procurement of advanced technology monitoring equipment for up to 10 sites; (3) establishment of 2 new sites in the middle of the country to improve geographic coverage and spatial resolution; and (4) implementation of new ecological indicators of air quality and atmospheric deposition to expand the suite of environmental metrics available for measuring the performance and efficiency of EPA's clean air programs.

References:

For additional information about CASTNET, see www.epa.gov/castnet and for NADP, see http://nadp.sws.uiuc.edu/.

For a description of EPA's Acid Rain program, see www.epa.gov/airmarkets and in the electronic Code of Federal Regulations at www.epa.gov/docs/epacfr40/chapt-I.info/ (40 CFR parts 72-78.)

For TIME and LTM data quality and QA/QC procedures, see

Newell, A. D., C. F. Powers, and S. J. Christie. 1987. Analysis of Data from Long-term monitoring of Lakes. U.S. Environmental Protection Agency, Corvallis, OR.

Peck, D.V. 1992. Environmental Monitoring and Assessment Program: Integrated Quality Assurance Project Plan for the Surface Waters Resource Group. EPA/600/X-91/080, U.S. Environmental Protection Agency.

Stoddard, J. L., J. S. Kahl, F. A. Deviney, D. R. DeWalle, C. T. Driscoll, A. T. Herlihy, J. H. Kellogg, P. S. Murdoch, J. R. Webb, and K. E. Webster. 2003. Response of surface water chemistry to the Clean Air Act Amendments of 1990. EPA/620/R-03/001, U.S. Environmental Protection Agency, Corvallis, Oregon.

FY 2005 PERFORMANCE MEASURES:

Cumulative percent increase in the number of people who live in areas with ambient criteria pollutant concentrations below the level of the NAAQS.

Cumulative percent increase in the number of areas with ambient criteria pollutant concentrations below the level of the NAAQS.

Areas measuring clean air for NAAQS.

Performance results related to these measures are presented in Goal 1, pages 46-49, 52.

Performance Databases:

AQS: The Air Quality Subsystem (AQS) stores ambient air quality data used to evaluate an area's air quality levels relative to the NAAQS.

FREDS: The Findings and Required Elements Data System is used to track progress of states and Regions in reviewing and approving the required data elements of the State Implementation Plans (SIP). SIPs are clean air plans and define what actions a state will take to improve the air quality in areas that do not meet national ambient air quality standards

Data Sources:

AQS: State & local agency data from State and Local Air Monitoring Stations (SLAMS).

Population: Data from Census-Bureau/Department of Commerce FREDS: Data are provided by EPA's Regional offices.

Methods, Assumptions, and Suitability:

Air quality levels are evaluated relative to the level of the appropriate NAAQS. Next the populations in areas with air quality concentrations above the level of the NAAQS are aggregated. This analysis assumes that the populations of the areas are held constant at 2000 Census levels. Data comparisons over several years allow assessment of the air program's success.

QA/QC Procedures:

AQS: The QA/QC of the national air monitoring program has several major components: the Data Quality Objective (DQO) process, reference and equivalent methods program, EPA's National Performance Audit Program (NPAP), system audits, and network reviews. To ensure quality data, the SLAMS are required to meet the following: 1) each site must meet network design and site criteria; 2) each site must provide adequate QA assessment, control, and corrective action functions according to minimum program requirements; 3) all sampling methods and equipment must meet EPA reference or equivalent requirements; 4) acceptable data validation and record keeping procedures must be followed; and 5) data from SLAMS must be summarized and reported annually to EPA. Finally, there are system audits that regularly review the overall air quality data collection activity for any needed changes or corrections. Further information available on the Internet: www.epa.gov/cludygxb/programs/namslam.html and through United States EPA's Quality Assurance Handbook (EPA-454/R-98-004 Section 15).

Populations: No additional QA/QC beyond that done by the Census Bureau/Department of Commerce.

Data Quality Review:

AQS: No external audits have been done in the last 3 years. However, internal audits are regularly conducted.

Populations: No additional QA/QC beyond that done by the Census Bureau/Department of Commerce.

Error Estimate:

At this time it is not possible to develop an error estimate. There is still too much uncertainty in the projections and near term variations in air quality (due to meteorological conditions for example) exist.

New/Improved Data or Systems:

AQS: In January 2002, EPA completed the reengineering of AQS to make it a more

user friendly, Windows-based system. As a result, air quality data are more easily accessible via the Internet. AQS has also been enhanced to comply with the Agency's data standards (e.g., latitude/longitude, chemical nomenclature). Beginning in July 2003, agencies submitted air quality data to AQS thru the Agency's Central Data Exchange (CDX). CDX is intended to be the portal through which all environmental data coming to or leaving the Agency will pass.

References:

For additional information about criteria pollutant data, non-attainment areas, and other related information, see: www.epa.gov/airtrends/.

FY 2005 PERFORMANCE MEASURES:

Estimated Mobile Source VOC Emissions.
Estimated Mobile Source NO_x Emissions.
Estimated Mobile Source PM_{10} Emissions.
Estimated Mobile Source $PM_{2.5}$ Emissions.
Estimated Mobile Source CO Emissions.

Performance results related to these measures are presented in Goal 1, pages 46-49.

Performance Databases:

National Emissions Inventory Database. See: www.epa.gov/ttn/chief/trends/.

Data Source:

Mobile source emissions inventories and Regulatory Impact Analyses.

Estimates for on-road, off-road mobile source emissions are built from inventories fed into the relevant models, which in turn provide input to the National Emissions Inventory Database.

The MOBILE vehicle emission factor model is a software tool for predicting gram per mile emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, carbon dioxide, particulate matter, and toxics from cars, trucks, and motorcycles under various conditions. Inputs to the model include fleet composition, activity, temporal information, and control program characteristics.

The NONROAD emission inventory model is a software tool for predicting emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, particulate matter, and sulfur dioxides from small and large off road vehicles, equipment, and engines. Inputs to the model include fleet composition, activity and temporal information.

Certain mobile source information is updated annually. Inputs are updated annually only if there is a rationale and readily available source of annual data. Generally, Vehicle Miles Traveled (VMT), the mix of VMT by type of vehicle (Federal Highway Administration (FHWA)-types), temperature, gasoline properties, and the designs of Inspection/Maintenance (I/M) programs are updated each year. Emission factors for all mobile sources and activity estimates for non-road sources are changed only when the Office of Transportation and Air Quality requests that this be done and is able to provide the new information in a timely manner. The most recent models for mobile sources are Mobile 6 and Nonroad 2002. (Available on the Internet at www.epa.gov/otaq/models.htm.)

EPA regulatory packages always include detailed Regulatory Impact Analysis which estimates the costs industry is projected to accrue in meeting EPA regulations. These cost estimates will form the basis of the numbers in the EPA performance measures. Also, costs for the EPA mobile source program (including personnel costs) will be included also. Estimates will be made for various years for tons/dollar for pollutants (the total of HC, CO, NO_x, and PM) removed.

Methods, Assumptions, and Suitability:

EPA issues emissions standards that set limits on how much pollution can be emitted from a given mobile source. Mobile sources include vehicles that operate on roads and highways ("on road" or "highway" vehicles), as well as nonroad vehicles, engines, and equipment. Examples of mobile sources are cars, trucks, buses, earthmoving equipment, lawn and garden power tools, ships, railroad locomotives, and airplanes. Vehicle and equipment manufacturers have responded to many mobile source emission standards by redesigning vehicles and engines to reduce pollution.

EPA uses models to estimate mobile source emissions, for both past and future years. The estimates are used in a variety of different settings. The estimates are used for rulemaking.

The most complete and systematic process for making and recording such mobile source emissions is the "Trends" inventory process executed each year by the Office of Air Quality Planning and Standards' (OAQPS) Emissions, Monitoring, and Analysis Division (EMAD). The Assessment and Standards Division, within the Office of Transportation and Air Quality, provides EMAD information and methods for making the mobile source estimates. In addition, EMAD's contractors obtain necessary information directly from other sources; for example, weather data and the Federal Highway Administration's (FHWA) Vehicle Miles Traveled (VMT) estimates by state. EMAD creates and publishes the emission inventory estimate for the most recent historical year, detailed down to the county level and with over 30 line items representing mobile sources. At irregular intervals as required for regulatory analysis projects, EMAD creates estimates of emissions for future years. When the method for estimating emissions changes significantly, EMAD usually revises its older estimates of emissions in years prior to the most recent year, to avoid a sudden discontinuity in the apparent emissions trend. EMAD publishes the national emission estimates in hardcopy; county-level estimates are avail-

able electronically. Additional information about transportation and air quality related to estimating, testing for, and measuring emissions, as well as research being conducted on technologies for reducing emissions is available at www.epa.gov/otaq/research.htm

When major changes are made in the emission models or resulting inventories (and even the cost estimates), the performance measures will be reviewed to determine if they should be updated.

QA/QC Procedures:

The emissions inventories are continuously improved.

Data Quality Review:

The emissions inventories are reviewed by both internal and external parties, including the states, locals and industries.

Data Limitations:

The limitations of the inventory estimates for mobile sources come from limitations in the modeled emission factors (based on emission factor testing and models predicting overall fleet emission factors in g/mile) and also in the estimated vehicle miles traveled for each vehicle class (derived from Department of Transportation data).www.epa.gov/otaq/m6.htm. For nonroad emissions, the estimates come from a model using equipment populations, emission factors per hour or unit of work, and an estimate of usage. This nonroad emissions model accounts for over 200 types of nonroad equipment. Any limitations in the input data will carry over into limitations in the emission inventory estimates.

Error Estimate:

Additional information about data integrity is available at: www.epa.gov/otaq/m6.htm.

New/Improved Data or Systems:

To keep pace with new analysis needs, new modeling approaches, and new data, EPA is currently working on a new modeling system termed the Multi-scale Motor Vehicles and Equipment Emission System (MOVES). This new system will estimate emissions for on road and off road sources, cover a broad range of pollutants, and allow multiple scale analysis, from fine scale analysis to national inventory estimation. When fully implemented, MOVES will serve as the replacement for MOBILE6 and NONROAD. The new system will not necessarily be a single piece of software, but instead will encompass the necessary tools, algorithms, underlying data and guidance necessary for use in all official analyses associated with regulatory development, compliance with statutory requirements, and national/regional inventory projections. Additional information is available on the Internet: www.epa.gov/otaq/ngm.htm.

References:

Additional information about mobile source programs is available at: http://www.epa.gov/otaq/.

FY 2005 PERFORMANCE MEASURES:

Mobile Source Air Toxics Emissions Reduced.

Stationary Source Air Toxics Emissions Reduced.

All Other Air Toxics Emissions Reduced.

Performance results related to these measures are presented in Goal 1, page 50.

Performance Database:

National Emissions Inventory (NEI) for Hazardous Air Pollutants (HAPs).

Data Source:

To calculate performance measures, the data source used is the NEI for HAPs which includes emissions from large and small industrial sources inventoried as point sources, smaller stationary area and other sources, such as fires inventoried as nonpoint sources, and mobile sources.

Prior to the 1999 NEI for HAPs, there was the National Toxics Inventory (NTI). The baseline NTI (for base years 1990—1993) includes emissions information for 188 hazardous air pollutants from more than 900 stationary sources and from mobile sources. It is based on data collected during the development of Maximum Achievable Control Technology (MACT) standards, state and local data, Toxics Release Inventory (TRI) data, and emissions estimates using accepted emission inventory methodologies. The baseline NTI contains county level emissions data , not facility-specific data.

The 1996 NTI and 1999 NEI for HAPs contain estimates of facility-specific HAP emissions and their source specific parameters such as location (latitude and longitude) and facility characteristics (stack height, exit velocity, temperature, etc.)

The primary source of data in the 1996 and 1999 NTI is state and local air pollution control agencies and Tribes. These data vary in completeness, format, and quality. EPA evaluates these data and supplements them with data gathered while developing MACT and residual risk standards, industry data, and TRI data. To produce a complete national inventory, EPA estimates emissions for approximately 30 non-point source categories such as wildfires and residential heating sources not included in the state, local and Tribal data. Mobile source data are developed using data provided by state and local agencies and Tribes and the most current onroad and nonroad models developed by EPA's Office of Transportation and Air Quality. The draft 1996 NTI and 1999 NEI for HAPS underwent extensive review by state and local agencies, Tribes, industry, EPA, and the public.

For more information and references on the development of the 1996 NTI, please go to the following web site: http://www.epa.gov/ttn/chief/nti/index.html#nti. For more information and references on the development of the 1999 NEI for HAPs, please go to the following web site: www.epa.gov/ttn/chief/net/index.html#1999.

Methods, Assumptions and Suitability:

To produce a complete model-ready national inventory, EPA estimates emissions for approximately 30 non-point source categories such as wildfires and residential heating sources not included in the state, local and Tribal data. Mobile source data are developed using data provided by state and local agencies and Tribes and the most current onroad and nonroad models developed by EPA's Office of Transportation and Air Quality.

Upon development of the inventory, the EMS-HAP (Emissions Modeling System for Hazardous Air Pollutants) is used to estimate annual emissions of air toxics for the 1996 NTI and 1999 NEI for HAPS (and for all years in-between). The EMS-HAP can project future emissions, by adjusting stationary source emission data to account for growth and emission reductions resulting from emission reduction scenarios such as the implementation of the Maximum Achievable Control Technology (MACT) standards.

For more information and references on EMS-HAP, please go to: www.epa.gov/ttn/chief/emch/projection/emshap.html.

QA/QC Procedures:

The NTI and the NEI for HAPs are databases designed to house information from other primary sources. The EPA performs extensive quality assurance/quality control (QA/QC) activities, including checking data provided by other organizations, to improve the quality of the emission inventory. Some of these activities include: (1) the use of an automated format QC tool to identify potential errors of data integrity, code values, and range checks; (2) use of geographical information system (GIS) tools to verify facility locations; and (3) automated content analysis by pollutant, source category and facility to identify potential problems with emission estimates such as outliers, duplicate sites, duplicate emissions, coverage of a source category, etc. The content analysis includes a variety of comparative and statistical analyses. The comparative analyses help reviewers prioritize which source categories and pollutants to review in more detail based on comparisons using current inventory data and prior inventories. The statistical analyses help reviewers identify potential outliers by providing the minimum, maximum, average, standard deviation, and selected percentile values based on current data. The EPA is currently developing an automated QC content tool for data providers to use prior to submitting their data to EPA. After investigating errors identified using the automated QC format and GIS tools, the EPA follows specific guidance on augmenting data for missing data fields.

The NTI database contains data fields that indicate if a field has been augmented and identifies the augmentation method. After performing the content analysis, the EPA contacts data providers to reconcile potential errors. The draft NTI is posted for external review and includes a README file, with instructions on review of data and submission of revisions, state-by-state modeling files with all modeled data fields, and summary files to assist in the review of the data. One of the summary files includes a comparison of point source data submitted by different organizations. During the external review of the data, state and local agencies, Tribes, and industry provide external QA of the inventory. The EPA evaluates proposed revisions from external reviewers and prepares memos for individual reviewers documenting incorporation of revisions and explanations if revisions were not incorporated. All revisions are tracked in the database with the source of original data and sources of subsequent revision.

The external QA and the internal QC of the inventory have resulted in significant changes in the initial emission estimates, as seen by comparison of the initial draft NEI for HAPs and its final version. For more information on QA/QC of the NEI for HAPs, please refer to the following web site for a paper presented at the 2002 Emission Inventory Conference in Atlanta. "QA/QC—An Integral Step in the Development of the 1999 National Emission Inventory for HAPs," Anne Pope, et at www.epa.gov/ttn/.

EPA's Office of Environmental Information (OEI) has created uniform data standards or elements, which provide "meta" information on the standard NEI Input Format (NIF) fields. These standards were developed by teams representing states, Tribes, EPA and other Federal agencies. The use of common data standards among partners fosters consistently defined and formatted data elements and sets of data values, and provides public access to more meaningful data. The standards relevant to the NEI for HAPs are the: SIC/NAICS, Latitude/Longitude, Chemical Identification, Facility Identification, Date, Tribal and Contact Data Standards. The 1999 NEI for HAPs is compliant with all new data standards except the Facility Identification Standard because OEI has not completed its assignment of Facility IDs to the 1999 NEI for HAPs facilities.

For more information on compliance of the NEI for HAPs with new OMB Information Quality Guidelines and new EPA data standards, please refer to the following web site for a paper presented at the 2003 Emission Inventory Conference in San Diego: "The Challenge of Meeting New EPA Data Standards and Information Quality Guidelines in the Development of the 2002 NEI Point Source Data for HAPs," Anne Pope, et al. www.epa.gov/ttn/.

The 2002 NEI for HAPs will undergo scientific peer review in early 2005.

Data Quality Review:

EPA staff, state and local agencies, Tribes, industry and the public review the NTI and the NEI for HAPs. To assist in the review of the 1999 NEI for HAPs, the EPA provided a comparison of data from the three data sources (MACT/residual risk data, TRI, and state, local and Tribal inventories) for each facility. For the 1999 NEI for HAPs, two periods were available for external review—October 2001–February 2002 and October 2002–March 2003. The final 1999 NEI was completed and posted on the Agency website in the fall of 2003. Beginning in 2005, the NTI will undergo an external scientific peer review.

In 2001, EPA's Science Advisory Board (SAB) reviewed the EMS-HAP model as part of the 1996 national-scale assessment. The review was generally supportive of the assessment purpose, methods, and presentation; the committee considers this an important step toward a better understanding of air toxics.

Data Limitations:

While emissions estimating techniques have improved over the years, broad assumptions about the behavior of sources and serious data limitations still exist. The NTI

and the NEI for HAPs contain data from other primary references. Because of the different data sources, not all information in the NTI and the NEI for HAPs has been developed using identical methods. Also, for the same reason, there are likely some geographic areas with more detail and accuracy than others. Because of the lesser level of detail in the baseline NTI, it is currently not suitable for input to dispersion models. For further discussion of the data limitations and the error estimates in the 1999 NEI for HAPs, please refer to the discussion of Information Quality Guidelines in the documentation at: www.epa.gov/ttn/chief/net/index.html#haps99.

In 2004, the Office of the Inspector General (OIG) released a final evaluation report on "EPA's Method for Calculating Air Toxics Emissions for Reporting Results Needs Improvement" (report can be found at www.epa.gov/oig/). The report stated that although the methods used have improved substantially, unvalidated assumptions and other limitations underlying the NTI continue to impact its use as a GPRA performance measure. As a result of this evaluation and the OIG recommendations for improvement, EPA prepared an action plan and is looking at way to improve the accuracy and reliability of the data. EPA will meet bi-annually with OIG to report on its progress in completing the activities as outlined in the action plan.

New/Improved Data or Systems:

The 1996 NTI and 1999 NEI for HAPs are a significant improvement over the baseline 1993 NTI because of the added facility-level detail (e.g., stack heights, latitude/longitude locations), making it more useful for dispersion model input. Future inventories (2002 and later years) are expected to improve significantly because of increased interest in the NEI for HAPs by regulatory agencies, environmental interests, and industry, and the greater potential for modeling and trend analysis. During the development of the 1999 NEI for HAPs, all primary data submitters and reviewers were required to submit their data and revisions to EPA in a standardized format using the Agency's Central Data Exchange (CDX). For more information on CDX, please go the following web site: www.epa.gov/ttn/chief/nif/cdx.html.

References:

The NTI and NEI data and documentation is available at the following site:

NEON: ttnwww.rtpnc.epa.gov/Neon/

Available inventories: 1996 NTI and 1999 NEI for HAPs

Contents: Summary data files

Audience: EPA staff

Goal 1, Objective 2

FY 2005 *OVERARCHING* PERFORMANCE MEASURE:
People Living in Healthier Indoor Air.
FY 2005 PERFORMANCE MEASURE:
People Living in Radon Resistant Homes.
Performance results related to these measures are presented in Goal 1, page 54.

Performance Database:

Annual industry survey data of home builders provided by the National Association of Home Builders.

Data Source:

The survey is an annual sample of home builders in the United States most of whom are members of the National Association of Home Builders (NAHB). NAHB members construct 80% of the homes built in the United States each year. Using a survey methodology reviewed by EPA, NAHB Research Center estimates the percentage of these homes that are built radon resistant. The percentage built radon resistant from the sample is then used to estimate what percent of all homes built nationwide are radon resistant. To calculate the number of people living in radon resistant homes, EPA assumes an average of 2.67 people per household. NAHB Research Center has been conducting this annual builder practices survey for over a decade, and has developed substantial expertise in the survey's design, implementation, and analysis. The statistical estimates are typically reported with a 95 percent confidence interval.

Methods, Assumptions, and Suitability:

NAHB Research Center conducts an annual survey of home builders in the United States to assess a wide range of builder practices. NAHB Research Center voluntarily conducts this survey to maintain an awareness of industry trends in order to improve American housing and to be responsive to the needs of the home building industry. The annual survey gathers information such as types of houses built, lot sizes, foundation designs, types of lumber used, types of doors and windows used, etc. The NAHB Research Center Builder Survey also gathers information on the use of radon-resistant design features in new houses, and these questions comprise about two percent of the survey questionnaire.

In January of each year, the survey of building practices for the preceding calendar year is typically mailed out to home builders. For the most-recently completed survey, for building practices during calendar year 2003, NAHB Research Center

reported mailing the survey to about 45,000 active United States home building companies, and received about 2,300 responses, which translates to a response rate of about 5 percent. The survey responses are analyzed, with respect to State market areas and Census Divisions in the United States, to assess the percentage and number of homes built each year that incorporate radon-reducing features. The data are also used to assess the percentage and number of homes built with radon-reducing features in high radon potential areas in the United States (high risk areas). Other analyses include radon-reducing features as a function of housing type, foundation type, and different techniques for radon-resistant new home construction. The data are suitable for year-to-year comparisons.

QA/QC Procedures:

Because data are obtained from an external organization, QA/QC procedures are not entirely known. According to NAHB Research Center, QA/QC procedures have been established, which includes QA/QC by the vendor that is utilized for key entry of data.

Data Quality Review:

Because data are obtained from an external organization, Data Quality Review procedures are not entirely known. NAHB Research Center indicates that each survey is manually reviewed, a process that requires several months to complete. The review includes data quality checks to ensure that the respondents understood the survey questions and answered the questions appropriately. NAHB Research Center also applies checks for open-ended questions to verify the appropriateness of the answers. In some cases, where open-ended questions request numerical information, the data are capped between the upper and lower three percent of the values provided in the survey responses. Also, a quality review of each year's draft report from NAHB Research Center is conducted by the EPA project officer.

Data Limitations:

The majority of home builders surveyed are NAHB members. The NAHB Research Center survey also attempts to capture the activities of builders that are not members of NAHB. Home builders that are not members of NAHB are typically smaller, sporadic builders that in some cases build homes as a secondary profession. To augment the list of NAHB members in the survey sample, NAHB Research Center sends the survey to home builders identified from mailing lists of builder trade publications, such as Professional Builder magazine. There is some uncertainty as to whether the survey adequately characterizes the practices of builders who are not members of NAHB. The effects on the findings are not known.

Although an overall response rate of 5 percent could be considered low, it is the response rate for the entire survey, of which the radon-resistant new construction questions are only a very small portion. Builders responding to the survey would not be doing so principally due to their radon activities. Thus, a low response rate does not necessarily indicate a strong potential for a positive bias under the speculation that builders using radon-resistant construction would be more likely to respond to the survey. NAHB Research Center also makes efforts to reduce the potential for positive bias in the way the radon-related survey questions are presented.

References:

The results are published by the NAHB Research Center in annual reports of radon-resistant home building practices. See www.nahbrc.org/ last accessed 7/27/2005 for more information about NAHB. The most recent report, "Builder Practices Report: Radon Reducing Features in New Construction 2003," Annual Builder and Consumer Practices Surveys by the NAHB Research Center, Inc., November, 2004. Similar report titles exist for prior years.

FY 2005 PERFORMANCE MEASURE:
People Living in Radon Mitigated Homes.

Performance results related to these measures are presented in Goal 1, page 54.

Performance Database:

External

Data Source:

Radon fan manufacturers report fan sales to the Agency. EPA assumes one fan per radon mitigated home, assumes a fan life of 10 years, and then multiplies the assumed number of working fans by the assumed average of 2.67 people per household.

QA/QC Procedures:

Because data are obtained from an external organization, EPA relies on the business practices for reporting data of the radon fan manufacturers.

Data Quality Review:

Data are obtained from an external organization. EPA reviews the data to ascertain their reliability and discusses any irregularities with the relevant manufacturer.

Data Limitations:

Reporting by radon fan manufacturers is voluntary and may underestimate the number of radon fans sold. Nevertheless, these are the best available data to determine the number of homes mitigated. There are other methods to mitigate radon including: passive mitigation techniques of sealing holes and cracks in floors and foundation walls, installing sealed covers over sump pits, installing one-way drain valves in untrapped drains, and installing static venting and ground covers in areas like crawl spaces. Because there are no data on the occurrence of these methods, there is again the possibility that the number of radon mitigated homes has been underestimated.

No radon vent fan manufacturer, vent fan motor maker or distributor is required to report to EPA; they provide data/information voluntarily to EPA. There are only four (4) radon vent fan manufacturers of any significance; one of these accounts for an estimated 70% of the market. Radon vent fans are unlikely to be used for non-radon applications. However, vent fans typically

used for non-radon applications are perhaps being installed as substitutes for radon vent fans in some instances; estimated to be less than 1% of the total market. Ascertaining the actual number of radon vent fans used for other applications, and the number of non-radon fans being substituted in radon applications, would be difficult and expensive at this time relative to the benefit of having such data.

References:

See www.epa.gov/iaq/radon/pubs/index.html last accessed 7/27/2005 for National performance/progress reporting (National Radon Results: 1985 to 2003*) on radon, measurement, mitigation and radon-resistant new construction. Data through 2004 are available from the Indoor Environments Division of the Office of Air and Radiation.

FY 2005 PERFORMANCE MEASURE:

Number of people with asthma who have taken steps to reduce their exposure to indoor environmental asthma triggers.

Performance results related to these measures are presented in Goal 1, page 54.

Note:

The name of the *"National Survey on Environmental Management of Asthma"* has been changed to *"National Survey on Environmental Management of Asthma and Children's Exposure to ETS"* to more appropriately reflect its actual content. Although this is a name change from that approved by OMB under the Information Collection Request (ICR), in all other respects, the content and substance of the survey are the same.

Performance Database:

The performance database consists of quarterly Partner status reports used to document the outcomes of individual projects; a media tracking study used to assess behavior change within that sector of the public viewing the public service announcements, and a national telephone survey *(National Survey on Environmental Management of Asthma and Children's Exposure to ETS)* which seeks information about the measures taken by people with asthma, and parents of children with asthma to minimize exposure to indoor environmental asthma triggers. Additional information about asthma morbidity and mortality in the US is obtained from the Centers for Disease Control and Prevention (CDC). Annual expenditures for health and lost productivity due to asthma are obtained from the National Heart Lung and Blood Institute (NHLBI) Chartbook www.nhlbi.nih.gov/resources/docs/02_chtbk.pdf last accessed 7/27/2005.

EPA also collects data on children exposed to environmental tobacco smoke in the home. This information is used in supporting the asthma goals of the program. EPA focuses its work on ETS on children in low income and minority populations, and on children with asthma. The *National Survey on Environmental Management of Asthma and Children's Exposure to ETS*, which includes a series of questions about whether respondents allow smoking in their home, whether young children are in the home, what resident family members smoke and how often, and how much visitors contribute to exposure, is used to track progress toward reducing childhood ETS exposure. Information about ETS is obtained periodically from the Centers for Disease Control and Prevention (CDC) including the National Health Interview, the National Health and Nutrition Examination Survey (for cotinine data), and the Behavioral Risk Factor Surveillance Survey (for state tobacco/ETS exposure data).

Data Source:

Each component of the database has a unique source. Partner status reports are generated by those organizations receiving funding from EPA and are maintained by individual EPA Project Officers. An independent initiative of the Advertising Council provides media tracking of outcomes of all of their public service campaigns and this is publicly available information. The *National Survey on Environmental Management of Asthma and Children's Exposure to ETS* (OMB control number 2060-0490) source is EPA. Data on asthma morbidity and mortality is available from the National Center for Health Statistics at the CDC (www.cdc.gov/nchs last accessed 7/27/2005). Data on annual expenditures for health and lost productivity due to asthma are obtained from the NHLBI Chartbook.

Methods, Assumptions and Suitability:

End-of–year performance is a best professional estimate using all data sources. The survey provides more statistically sound results for one period of time; the next scheduled survey will provide performance results for year 2006.

National Survey on Environmental Management of Asthma and Children's Exposure to ETS (OMB control number 2060-0490): This survey is the most robust data set for this performance measure, but it is not administered annually. The first survey, administered in 2003, was designed in consultation with staff from EPA and the CDC National Center for Health Statistics (NCHS) to ensure that respondents will understand the questions asked and will provide the type of data necessary to measure the Agency's objectives. In addition, care has been taken to ensure that the survey questions target the population with asthma by using the same qualifier question that appears on other national surveys on asthma collected by the CDC.

From an initial sampling frame of 124,994 phone numbers, 14,685 households were contacted successfully and agreed to participate in the screening survey. Of the 14,685 individuals screened, approximately 18 percent, or 2,637 individuals, either have asthma or live with someone who does. Only those individuals who have asthma or live with someone who does were considered to be eligible respondents.

Respondents were asked to provide primarily yes/no responses. In some cases, respondents were given a range of responses in the form of multiple choice questions and were asked to indicate the one which best defined their response.

The survey seeks information on those environmental management measures that the Agency considers important in reducing an individual's exposure to known indoor environmental asthma triggers. By using yes/no and multiple choice questions, the Agency has substantially reduced the amount of time necessary for the respondent to complete the survey and has ensured consistency in data response and interpretation.

The information collected has been used to establish a baseline to reflect the characteristics of our nation's asthma population and future iterations of this survey will measure additional progress toward achieving performance goals. The next survey will take place in 2006.

On an annual basis, EPA requires (programmatic terms and conditions of the award) all funded organizations to provide quarterly reports identifying how many health care professionals are educated about indoor asthma triggers.

QA/QC Procedures:

It is assumed that partner organizations report data as accurately and completely as possible; site-visits are conducted by EPA project officers as warranted. The National Survey is designed in accordance with approved Agency procedures. Additional information is available on the Internet: www.epa.gov/icr/players.html last accessed 7/27/2005. The computer assisted telephone interview methodology used for this survey helps to limit errors in data collection. In addition, the QA/QC procedures associated with conducting the survey include pilot testing of interview questions, interviewer training to ensure consistent gathering of information, and random data review to reduce the possibility of data entry error.

Data Quality Review:

EPA reviews the data from all sources to ascertain reliability.

Data Limitations:

Asthma: For the National Survey, random digit dialing methodology is used to ensure that a representative sample of households has been contacted; however, the survey is subject to inherent limitations of voluntary telephone surveys of representative samples. For example, 1) survey is limited to those households with current telephone service; 2) interviewers may follow survey directions inconsistently. An interviewer might ask the questions incorrectly or inadvertently lead the interviewee to a response; or 3) the interviewer may call at an inconvenient time (i.e., the respondent might not want to be interrupted at the time of the call and may resent the intrusion of the phone call; the answers will reflect this attitude.).

ETS: Currently available cotonine (a chemical in environmental tobacco smoke) survey data do not address 50% of the age specific portion of EPA's target population. It does not include birth to 3 years old, the portion of children most susceptible to the effects of ETS.

Error Estimate:

In its first data collection with this instrument, the Agency achieved results within the following percentage points of the true value at the 95 percent confidence level (survey instrument):

Adult Asthmatics	plus or minus	2.4%
Child Asthmatics	plus or minus	3.7%
Low Income Adult Asthmatics	plus or minus	6.1%

These precision rates are sufficient to characterize the extent to which the results measured by the survey accurately reflect the characteristics of our nation's asthmatic population.

New/Improved Data or Systems:

Data from the *National Survey on Environmental Management of Asthma and Children's Exposure to ETS* (OMB control number 2060-0490) were collected from August 4-September 17, 2003 and represent the first data collection with this instrument.

References:

Asthma

National Center for Health Statistics, Centers for Disease Control and Prevention (www.cdc.gov/nchs/ last accessed 7/27/2005)

EPA Indoor Environments Division (www.epa.gov/iaq/ last accessed 7/27/2005)

EPA Indoor Environments Division (www.epa.gov/iaq/ last accessed 7/27/2005)

ETS

National Health Interview Survey and National Health and Nutrition Examination Survey are part of the National Center for Health Statistics, Centers for Disease Control and Prevention (www.cdc.gov/nchs last accessed 7/27/2005)

Behavioral Risk Factor Surveillance Survey, Centers for Disease Control and Prevention (www.cdc.gov/brfss/index.htm last accessed 7/27/2005),

National Cancer Institute's (NCI) *Tobacco Monograph Series* (cancercontrol.cancer.gov/tcrb/monographs/ last accessed 7/27/2005),

NCI funded *Tobacco Use Supplement* portion of the US Census Bureau's *Current Population Survey* (riskfactor.cancer.gov/studies/tus-cps/ last accessed 7/27/2005),

Healthy People 2010 (www.healthypeople.gov/ last accessed 7/27/2005).

FY 2005 PERFORMANCE MEASURE:

Students, faculty and staff experiencing improved indoor air quality in their schools.

Performance results related to these measures are presented in Goal 1, page 55.

Performance Database:

EPA collects national data by conducting a survey of indoor air quality management practices in schools approximately every 3 years. The first survey was administered in 2002. EPA is partnering with CDC to incorporate IAQ management practice indicators, consistent with the benchmark survey, into the School Health Policies and

Programs Study (SHPPS) to be administered in 2006. EPA will implement this IAQ module as a smaller survey in 2009, as the SHPSS survey is only conducted at 6 year intervals.

To measure annual progress, EPA estimates the number of schools who establish IAQ Tools for Schools (TfS) programs each year from reports from partner organizations and regional recruiters, supplemented by tracking the volume of guidances distributed and number of people trained by EPA and its partners. EPA also collects information on program benefits such as reduced school nurse visits, improved workplace satisfaction among staff, reduced absenteeism, and cost savings experienced by schools.

Data Source:

The sources of the data include cooperative partners, USEPA and the statistical sample of all the public and private schools in the nation during the 1999 – 2000 school year (118,000); data are from the United States Department of Education National Center for Education Statistics.

Methods, Assumptions and Suitability:

Calculations for the number of people experiencing improved IAQ are based upon an average 525 students, staff and faculty per school (data are from the United States Department of Education National Center for Education Statistics). That number, along with the number of schools that are adopting/implementing TfS, are used to estimate the performance result.

End-of–year performance is a best professional estimate using all data sources. The survey provides more statistically sound results for one period of time; the next scheduled survey will provide performance results for year 2006. EPA's 2006 survey will be included as part of CDC's 2006 School Health Policies and Programs Study, which is conducted every 6 years.

QA/QC Procedures:

It is assumed that partner organizations report data as accurately and completely as possible; site visits and regular communication with grantees are conducted by EPA projects officers.

Data Quality Review:

EPA reviews the data from all sources in the performance database to ascertain reliability and to resolve any discrepancies.

Data Limitations:

The primary limitation associated with Cooperative Agreement Partner status reporting is the error introduced as a result of self-reporting.

New/Improved Data or Systems:

Prior to the 2003 survey, EPA tracked the number of schools receiving the TfS guidance and estimated the population of the school to determine the number of students/staff experiencing improved indoor air quality. The survey was administered to establish a baseline for schools implementing IAQ management practices. EPA queried a statistically representative sample of schools to estimate the number of schools that have actually adopted and implemented good IAQ management practices consistent with the TfS guidance. EPA plans to re-administer the survey as a component of CDC's School Health Policies and Programs Study, which will show progress from the baseline.

References:

See the United States Department of Education National Center for Education Statistics, nces.ed.gov/ last accessed 7/27/2005. See also Indoor Air Quality Tools for Schools Kit (402-K-95-001) at www.epa.gov/iaq/schools last accessed 7/27/2005 and see www.cdc.gov/nccdphp/dash/shpps/ For additional information about the School Health Policies and Programs Study (SHPPS), a national survey periodically conducted to assess school health policies and programs at the state, district, school, and classroom levels.

FY 2005 PERFORMANCE MEASURE:

Office Workers **experiencing** improved indoor air quality in their workplaces.

Performance results related to these measures are presented in Goal 1, page 56.

Performance Database:

Since fiscal year 1999 and each fiscal year thereafter, the performance database consists of the annual number of requested copies of building indoor air quality guidance documents, (e.g. EPA's Building Air Quality, I-Beam, a computer software designed to be a comprehensive state-of-the-art guidance for managing IAQ in commercial buildings, Mold Remediation in Schools and Commercial Buildings) and training conducted through cooperative agreements or other government agencies (GSA) using EPA documents. In addition, EPA conducted a voluntary pilot survey of building owners and managers in 2001 to determine the use of indoor air quality (IAQ) management practices in U.S. office buildings.

Data Source:

The pilot survey was developed by EPA and distributed by the Building Owners and Managers Association (BOMA). The pilot survey's purpose and design received approval from the Office of Management and Budget. The survey is not administered on an annual basis.

Methods, Assumptions and Suitability:

The pilot survey included data regarding: the size and uses of a selected building; documentation of management practices employed in the building; how the heating, ventilating, and air-conditioning systems are managed; how pollution sources are addressed; housekeeping and pest management practices; remodeling and renovation activities; and responses to tenant complaints regarding IAQ. A sampling frame was developed based upon random sampling of the membership lists from BOMA, the International Facilities Managers Association (IFMA) and buildings managed by the General Services Administration (GSA). The final sample size, (and survey recipient list) was 3,612 and we received 591 completed surveys. The survey results identified both

strengths and weaknesses in building management practices in U.S. office buildings.

End-of–year performance is a best professional estimate using all data sources. The survey provides more statistically sound results for one period of time.

QA/QC Procedures:

Survey was designed in accordance with approved Agency procedures. Additional information is available on the Internet: www.epa.gov/icr/players.html/ last accessed 12/22/2004. The quality review was conducted by BOMA.

Data Quality Review:

BOMA had responsibility for the accuracy of data entered into the database. Quality assurance safeguards were used in the data entry. BOMA, and EPA's contractor reviewed individual survey responses for accuracy during the aggregation and analyses activities.

Data Limitations:

The primary limitation associated with basing estimates on requests for guidance documents and training is the unknown factor of how many of the requests resulted in improved indoor air quality. The survey provided a reference point on progress. The survey results are subject to the limitations inherent in survey sampling. The response rate of 14% for the survey was low due to the timing of the survey administration and subsequent events in September and October 2001.

Error Estimate:

4% precision at a 95% confidence level.

Goal 1, Objective 3

FY 2005 PERFORMANCE MEASURES:

Remaining US consumption of HCFCs, measured in tons of ozone depleting potential (ODP).

Restrict Domestic Exempted Production and Import of Newly Produced Class I CFCs and Halons.

Performance results related to these measures are presented in Goal 1, page 57.

Performance Database:

The Allowance Tracking System (ATS) database is maintained by the Stratospheric Protection Division (SPD). ATS is used to compile and analyze quarterly information on U.S. production, imports, exports, transformations, and allowance trades of ozone-depleting substances (ODS).

Data Source:

Progress on restricting domestic exempted consumption of Class II HCFCs is tracked by monitoring industry reports of compliance with EPA's phase-out regulations. Data are provided by U.S. companies producing, importing, and exporting ODS. Corporate data are typically submitted as quarterly reports. Specific requirements as outlined in the Clean Air Act are available on the Internet at: www.epa.gov/oar/caa/caa603.txt. Monthly information on domestic production, imports, and exports from the International Trade Commission is maintained in the ATS.

Methods, Assumptions and Suitability:

Data are aggregated across all U.S. companies for each individual ODS to analyze U.S. total consumption and production.

QA/QC Procedures:

Reporting and record-keeping requirements are published in 40 CFR Part 82, Subpart A, Sections 82.9 through 82.13. These sections of the Stratospheric Ozone Protection Rule specify the required data and accompanying documentation that companies must submit or maintain on-site to demonstrate their compliance with the regulation.

The ATS data are subject to a Quality Assurance Plan (Quality Assurance Plan, USEPA Office of Atmospheric Programs, July 2002). In addition, the data are subject to an annual quality assurance review, coordinated by Office of Air and Radiation (OAR) staff separate from those on the team normally responsible for data collection and maintenance. The ATS is programmed to ensure consistency of the data elements reported by companies. The tracking system flags inconsistent data for review and resolution by the tracking system manager. This information is then cross-checked with compliance data submitted by reporting companies. SPD maintains a user's manual for the ATS that specifies the standard operating procedures for data entry and data analysis. Regional inspectors perform inspections and audits on-site at the producers', importers', and exporters' facilities. These audits verify the accuracy of compliance data submitted to EPA through examination of company records.

Data Quality Reviews:

The Government Accounting Office (GAO) completed a review of U.S. participation in five international environmental agreements, and analyzed data submissions from the U.S. under the Montreal Protocol on Substances the Deplete the Ozone Layer. No deficiencies were identified in their January 2003 report.

Data Limitations:

None, since companies are required by the Clean Air Act to report data. EPA's regulations specify a quarterly reporting system.

New/Improved Data or Systems:

The Stratospheric Protection Division is developing a system to allow direct electronic reporting.

References:

See www.epa.gov/ozone/desc.html for additional information on ODSs. See www.unep.ch/ozone/montreal.shtml for additional information about the Montreal Protocol. See www.multilateralfund.org/ for more information about the Multilateral Fund. Quality Assurance Plan, USEPA Office of Atmospheric Programs, July 2002

Goal 1, Objective 4

FY 2005 PERFORMANCE MEASURE:

Purchase and Deploy State-of-Art Monitoring Units.

Performance results related to these measures are presented in Goal 1, page 59.

Performance Data:

Data from the near real-time gamma component of the RadNet, formerly known as the Environmental Radiation Ambient Monitoring System (ERAMS), will be stored in an internal EPA database at the National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama. Data from filters are housed in the Laboratory Information Management System (LIMS) which are physically located in Montgomery, Alabama.

Data Source:

RadNet

Methods, Assumptions and Suitability:

Assuming that funding is continued in future years and the project receives all necessary approvals, the existing air sampling equipment will be supplemented with state-of-the art air monitors that include near real-time gamma radiation detection capability. Addition of detectors and communication systems will provide information about significant radioactive contamination events to decision-makers within hours.

QA/QC Procedures:

Quality Assurance and Quality Control Procedures will follow the Agency guidelines and be consistent with a specific initial operational Quality Assurance Plan that will be completed. All monitoring equipment will be periodically calibrated with reliable standards and routinely checked for accuracy with onsite testing devices. Laboratory analyses of air filters and other environmental media are closely controlled in compliance with the NAREL Quality Management Plan and applicable Standard Operating Procedures.

Data Quality Reviews:

The database will screen all incoming data from the monitoring systems for abnormalities as an indicator of either a contamination event or an instrument malfunction. Data will be held in a secure portion of the database until verified by trained personnel. Copies of quality assurance and quality control testing will also be maintained to assure the quality of the data.

Data Limitations:

Data are limited in near-real-time to gamma emitting radionuclide identification and quantification. Radiation levels from gamma-emitting nuclides that will be so low as to be "undetectable" will be significantly below health concerns that require immediate action. Lower levels of radioactive materials in the samples will be measured through laboratory-based analyses and data.

Error Estimate:

The overall error in detection capability is estimated to be within 50% of the actual concentration based on previous experience with similar measurement systems. An error analysis will be performed on the prototype systems during the process of detector selection.

New/Improved Performance Data or Systems:

New air samplers will maintain steady flow rates that are measured during operation and corrected for varying environmental conditions. Addition of gamma spectrometric detectors and computer-based multi-channel analyzers to the air samplers provide near real-time analyses of radioactive content in particles captured by the filter. In addition to data collection, the onboard computer systems can communicate results of analyses back to a central database and even identify abnormal conditions that might require action. These improvements not only include higher quality data, but also will provide information regarding contamination events to decision-makers within hours instead of days. The number and location of monitoring sites will be improved to provide greater coverage of more of the nation's population.

The plan for upgrading and expanding the RadNet air monitoring network was reviewed in FY05 by an EPA Technical Evaluation Panel (TEP) and will be reviewed in FY06 by the Radiation Advisory Committee (RAC) of EPA's Science Advisory Board (SAB). The TEP review provided a number of comments that were incorporated in the RadNet plan, especially those addressing the refinement of the overall system objectives. The SAB review is expected to provide discussion and guidance from a team of national experts that will address key aspects of the science and technology of the new network, including fundamental concerns such as the appropriateness and potential effectiveness of the plan for siting near-real-time air monitors across the nation.

References:

For additional information about the continuous monitoring system, ERAMS see: *www.epa.gov/narel/radnet*. NAREL Quality Management Plan, Revision 1, March 15, 2001.

FY 2005 PERFORMANCE MEASURE:

Percentage of EPA RERT members that meet scenario-based response criteria.

Performance results related to these measures are presented in Goal 1, page 59.

Performance Data:

To determine the effectiveness of RERT performance, an output measure has been developed that scores RERT members on a scale of one (1) to 100 against criteria developed based on the RERT's responsibilities under the National Response Plan's Nuclear/Radiological Incident Annex (formerly the Federal Radiological Emergency Response Plan) and the National Oil and Hazardous Substances Pollution Contingency Plan (the NCP). A baseline evaluation was performed in FY03, based on the effectiveness of the RERT in responses to actual incidents and a major national exercise (TOPOFF2). RERT members were evaluated in their ability to: (1) provide effective field response, (2) support coordination centers, and (3) provide analytical capabilities and to support a single small-to-medium scale incident, as needed. Overall RERT effectiveness in this baseline analysis was measured at approximately 13 percent. In FY 2004, RERT members were re-evaluated, through a major exercise, in the ability factors listed above. In FY 2005, the evaluation criteria have been reevaluated and revised in response to the results of the FY 2004 exercise as well as changes necessitated by the Homeland Security Act of 2002 and DHS' issuance of the National Incident Management System (NIMS) and the National Response Plan.

Data Source:

Based on the requirements of EPA set forth in the NRP's Nuclear/Radiological Incident Annex and the NCP, EPA has developed criteria against which the capabilities of the RERT are judged. This evaluation has been performed by members of the Radiation Protection Division, including representatives both within and outside the RERT itself.

Data Limitations:

The evaluation criteria were modified between FY2003 and FY2005 to reflect the changing requirements of the RERT, based on DHS' issuance of both NIMS and the NRP during this time period. While the broad outline of the RERT's role has remained the same, additional requirements have been imposed by the issuance of these documents, which are now reflected in the RERT evaluation criteria.

References:

The Homeland Security Act of 2002, the National Incident Management System, and the National Response Plan.

FY 2005 PERFORMANCE MEASURE:

Drums of Radioactive Waste Disposed of according to EPA Standards.

Performance results related to these measures are presented in Goal 1, page 58.

Performance Data:

The Department of Energy (DOE) Waste Isolation Pilot Plant (WIPP) database contains the number of drums shipped by DOE waste generator facilities and placed in the DOE WIPP. The WIPP is a DOE facility located in southeastern New Mexico, 26 miles from Carlsbad, New Mexico. The WIPP Land Withdrawal Act was passed by Congress in October 1992 and amended in September 1996. The act transferred the land occupied by the WIPP to DOE and gave EPA, regulatory responsibility for determining whether the facility complies with radioactive waste disposal standards. Through July 2005, EPA has completed over 97 on–site inspections to evaluate waste prior to shipment to the WIPP facility.

Data Source:

Department of Energy

QA/QC Procedures:

The performance data used by EPA are collected and maintained by DOE. Under EPA's WIPP regulations (available on the Internet: www.epa.gov/radiation/wipp/background.htm (last accessed 7/18/200), all DOE WIPP-related data must be collected and maintained under a comprehensive quality assurance program meeting consensus standards developed by the American Society of Mechanical Engineers (ASME) (available on the Internet: http://www.asme.org/codes (last accessed 7/18/2005)). EPA conducts regular inspections to ensure that these quality assurance systems are in place and functioning properly; no additional QA/QC of the DOE data is conducted by EPA.

Data Limitations:

The DOE WIPP database contains the number of drums shipped by DOE waste generator facilities and placed in the DOE WIPP. Currently, there are five DOE waste generator facilities that are approved to generate and ship waste: Los Alamos National Laboratory, Rocky Flats Environmental Technology Site, Hanford Site, Idaho National Engineering and Environmental Laboratory, Savannah River Site. Before DOE waste generator facilities can ship waste to the WIPP, EPA must approve the waste characterization controls and quality assurance procedures for waste identification at these sites. EPA conducts frequent independent inspections and audits at these sites to verify continued compliance with radioactive waste disposal standards and to determine if DOE is properly tracking the waste and adhering to specific waste component limits. Once EPA gives its approval, the number of drums shipped to the WIPP facility on an annual basis is dependent on DOE priorities and funding. EPA volume estimates are based on projecting the average shipment volumes over 40 years with an initial start up.

References:

The Department of Energy National TRU Waste Management Plan Quarterly Supplement www.wipp.ws/library/caolib.htm#Controlled (last accessed 7/18/2005) contains information on the monthly volumes of waste that are received at the DOE WIPP.

Goal 1, Objective 5

FY 2005 PERFORMANCE MEASURE:

Annual Greenhouse Gas Emissions Reductions overall and by Sector.

Performance results related to these measures are presented in Goal 1, page 60.

Performance Database:

Climate Protection Partnerships Division Tracking System. The tracking system's primary purpose is to maintain a record of the annual greenhouse gas emissions reduction goals and accomplishments for the voluntary climate program using information from partners and other sources. It also measures the electricity savings and contribution towards the President's greenhouse gas intensity goal.

Data Source:

EPA develops carbon and non-CO_2 emissions baselines. A baseline is the "business-as-usual" case without the impact of EPA's voluntary climate programs. Baseline data for carbon emissions related to energy use comes from the Energy Information Agency (EIA) and from EPA's Integrated Planning Model (IPM) of the U.S. electric power sector. These data are used for both historical and projected greenhouse gas emissions and electricity generation, independent of partners' information to compute emissions reductions from the baseline and progress toward annual goals. The projections use a "Reference Case" for assumptions about growth, the economy, and regulatory conditions. Baseline data for non-carbon dioxide (CO_2) emissions, including nitrous oxide and other high global warming potential gases, are maintained by EPA. The non-CO_2 data are compiled with input from industry and also independently from partners' information.

Data collected by EPA's voluntary programs include partner reports on facility-specific improvements (e.g. space upgraded, kilowatt-hours (kWh) reduced), national market data on shipments of efficient products, and engineering measurements of equipment power levels and usage patterns.

Baseline information is discussed at length in the U.S. Climate Action Report 2002. The report includes a complete chapter dedicated to the U.S. greenhouse gas inventory (sources, industries, emissions, volumes, changes, trends, etc.). A second chapter addresses projected greenhouse gases in the future (model assumptions, growth, sources, gases, sectors, etc.)

U.S. Department of State. 2002. "U.S. Climate Action Report—2002. Third National Communication of the United States of America under the United Nations Framework Convention on Climate Change."

Partners do contribute *actual* emissions data biannually after their facility-specific improvements but these emissions data are not used in tracking the performance measure. EPA, however, validates the estimates of greenhouse gas reductions based on the actual emissions data received.

Methods, Assumptions, and Suitability:

Most of the voluntary climate programs' focus is on energy efficiency. For these programs, EPA estimates the expected reduction in electricity consumption in kilowatt-hours (kWh). Emissions prevented are calculated as the product of the kWh of electricity saved and an annual emission factor (e.g., metric tons carbon equivalent (MMTCE) prevented per kWh). Other programs focus on directly lowering greenhouse gas emissions (e.g., Natural Gas STAR, Landfill Methane Outreach, and Coalbed Methane Outreach); for these, greenhouse gas emission reductions are estimated on a project-by-project basis. EPA maintains a "tracking system" for emissions reductions.

The Integrated Planning Model, used to develop baseline data for carbon emissions, is an important analytical tool for evaluating emission scenarios affecting the U.S. power sector. The IPM has an approved quality assurance project plan that is available from EPA's program office.

QA/QC Procedures:

EPA devotes considerable effort to obtaining the best possible information on which to evaluate emissions reductions from voluntary programs. Peer-reviewed carbon-conversion factors are used to ensure consistency with generally accepted measures of greenhouse gas (GHG) emissions, and peer-reviewed methodologies are used to calculate GHG reductions from these programs.

Partners do contribute actual emissions data biannually after their facility-specific improvements but these emissions data are not used in tracking the performance measure. EPA, however, validates the estimates of greenhouse gas reductions based on the actual emissions data received.

Data Quality Review:

The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. The second such interagency evaluation, led by the White House Council on Environmental Quality, examined the status of U.S. climate change programs. The review included participants from EPA and the Departments of State, Energy, Commerce, Transportation, and Agriculture. The results were published in the *U.S. Climate Action Report-2002* as part of the United States' submission to the Framework Convention on Climate Change (FCCC). The previous evaluation was published in the U.S. Climate Action Report-1997. A 1997 audit by EPA's Office of the Inspector General concluded that the climate programs examined "used good management practices" and "effectively estimated the impact their activities had on reducing risks to health and the environment..."

Data Limitations:

These are indirect measures of GHG emissions (carbon conversion factors and methods to convert material-specific reductions to GHG emissions reductions). Also, the voluntary nature of the programs may affect reporting. Further research will be necessary in order to fully understand the links between GHG concentrations and

specific environmental impacts, such as impacts on health, ecosystems, crops, weather events, and so forth.

Error Estimate:

These are indirect measures of GHG emissions. Although EPA devotes considerable effort to obtaining the best possible information on which to evaluate emissions reductions from its voluntary programs, errors in the performance data could be introduced through uncertainties in carbon conversion factors, engineering analyses, and econometric analyses. The only programs at this time aimed at avoiding GHG emissions are voluntary.

New/Improved Data or Systems:

The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. EPA continues to update inventories and methodologies as new information becomes available.

References:

The U.S. Climate Action Report 2002 is available at: www.epa.gov/globalwarming/publications/car/index.html. The accomplishments of many of EPA's voluntary programs are documented in the Climate Protection Partnerships Division Annual Report. The most recent version is *Protecting the Environment Together: ENERGY STAR and other Voluntary Programs*, Climate Protection Partnerships Division 2003 Annual Report.

FY 2005 PERFORMANCE MEASURE:

Annual Energy Savings.

Performance results related to these measures are presented in Goal 1, page 61.

Performance Database:

Climate Protection Partnerships Division Tracking System

Data Source:

Data collected by EPA's voluntary programs include partner reports on facility specific improvements (e.g. space upgraded, kilowatt-hours (kWh) reduced), national market data on shipments of efficient products, and engineering measurements of equipment power levels and usage patterns.

Methods, Assumptions, and Suitability:

Most of the voluntary climate programs' focus is on energy efficiency. For these programs, EPA estimates the expected reduction in electricity consumption in kilowatt-hours (kWh). Emissions prevented are calculated as the product of the kWh of electricity saved and an annual emission factor (e.g., MMTCE prevented per kWh). Other programs focus on directly lowering greenhouse gas emissions (e.g., Natural Gas STAR, Landfill Methane Outreach, and Coalbed Methane Outreach); for these, greenhouse gas emission reductions are estimated on a project-by-project basis. EPA maintains a "tracking system" for energy reductions.

Energy bill savings are calculated as the product of the kWh of energy saved and the cost of electricity for the affected market segment (residential, commercial, or industrial) taken from the Energy Information Administration's (EIA) Annual Energy Outlook and Annual Energy Review for each year in the analysis (1993-2013). Energy bill savings also include revenue from the sale of methane and/or the sale of electricity made from captured methane. The net present value (NPV) of these savings was calculated using a 4-percent discount rate and a 2001 perspective.

QA/QC Procedures:

EPA devotes considerable effort to obtaining the best possible information on which to evaluate energy savings from its voluntary programs.

Data Quality Review:

The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. The second such interagency evaluation, led by the White House Council on Environmental Quality, examined the status of U.S. climate change programs. The review included participants from EPA and the Departments of State, Energy, Commerce, Transportation, and Agriculture. The results were published in the U.S. Climate Action Report-2002 as part of the United States' submission to the Framework Convention on Climate Change (FCCC). The previous evaluation was published in the U.S. Climate Action Report-1997. A 1997 audit by EPA's Office of the Inspector General concluded that the climate programs examined "used good management practices" and "effectively estimated the impact their activities had on reducing risks to health and the environment..."

Data Limitations:

The voluntary nature of programs may affect reporting. In addition, errors in the performance data could be introduced through uncertainties in engineering analyses and econometric analyses.

Error Estimate:

Although EPA devotes considerable effort to obtaining the best possible information on which to evaluate emissions reductions from voluntary programs, errors in the performance data could be introduced through uncertainties in engineering analyses and econometric analyses.

New/Improved Data or Systems:

The Administration regularly evaluates the effectiveness of its climate programs through interagency evaluations. EPA continues to update inventories and methodologies as new information becomes available.

References:

The U.S. Climate Action Report 2002 is available at: www.epa.gov/globalwarming/publications/car/index.html. The accomplishments of many of EPA's voluntary programs are documented in the Climate Protection Partnerships Division Annual Report. The most recent version is *Protecting the Environment Together: Energy Star and Other Voluntary Programs,* Climate Protection Partnerships Division 2003 Annual Report.

Goal 1, Objective 6

FY 2005 PERFORMANCE MEASURE:

Fuel Economy of EPA-Developed SUV Hybrid Vehicle over EPA Driving Cycles Tested.

Performance results related to these measures are presented in Goal 1, page 62.

Performance Database:

Fuel economy test data for both urban and highway test cycles under the EPA Federal Test Procedure for passenger cars. The Clean Automotive Technology program commits EPA to develop technology by the end of the decade to satisfy stringent criteria emissions requirements and up to a doubling of fuel efficiency in personal vehicles such as SUVs, pickups, and urban delivery vehicles—while simultaneously meeting the more demanding size, performance, durability, and power requirements of these vehicles.

Data Source:

EPA fuel economy tests performed at the National Vehicle and Fuel Emissions Laboratory (NVFEL), Ann Arbor, Michigan.

QA/QC Procedures:

EPA fuel economy tests are performed in accordance with the EPA Federal Test Procedure and all applicable QA/QC procedures. Available on the Internet: http://www.epa.gov/otaq/sftp.htm.

Data Quality Reviews:

EPA's NVFEL laboratory is recognized as a national and international facility for fuel economy and emissions testing. NVFEL is also the reference point for private industry.

Data Limitations:

Primarily due to EPA regulations, vehicle fuel economy testing is a well established and precise exercise with extremely low test to test variability (well less than 5%). One challenge relates to fuel economy testing of hybrid vehicles (i.e., more than one source of onboard power), which is more complex than testing of conventional vehicles. EPA has not yet published formal regulations to cover hybrid vehicles. Relevant information is available on the Internet: www.ctts.nrel.gov/analysis/hev_test/procedures.shtml.

New/Improved Data or Systems:

EPA is using solid engineering judgment and consultations with other expert organizations (including major auto companies) to develop internal procedures for testing hybrid vehicles.

References:

See www.epa.gov/otaq/testproc.htm for additional information about testing and measuring emissions at the NVFEL.

FY 2005 PERFORMANCE MEASURE:

Improved receptor models and data on chemical compounds emitted from sources.

Performance results related to these measures are presented in Goal 1, page 62.

Performance Database:

Program output; no internal tracking system

Goal 2, Objective 1

FY 2005 PERFORMANCE MEASURES:[1]

The percentage of the population served by community water systems that receive drinking water that meets all applicable health-based drinking water standards.

The percentage of the population served by community water systems that receive drinking water that meets health-based standards with which systems need to comply as of December 2001.

The percentage of the population served by community water systems that receive drinking water that meets health-based standards with a compliance date of January 2002 or later (covered standards include: Stage 1 disinfection by-products/interim enhanced surface water treatment rule/long-term enhanced surface water treatment rule/arsenic).

The percentage of community water systems that provide drinking water that meets health-based standards with which systems need to comply as of December 2001.

The percentage of community water systems that provide drinking water that meets health-based standards with a compliance date of January 2002 or later.

The percentage of population served by community water systems in Indian country that receive drinking water that meets all applicable health-based drinking water standards.

Performance results related to these measures are presented in Goal 2, pages 74-77.

Performance Database:

Safe Drinking Water Information System—Federal Version (SDWIS or SDWIS-FED). SDWIS contains basic water system information, population served, and detailed records of violations of the Safe Drinking Water Act and the statute's implementing regulations. The performance measure is based on the population served by community water systems that were active during any part of the performance year and did not have any violations designated as "health based." Exceedances of a maximum contaminant level (MCL) and violations of a treatment technique are health-based violations. SDWIS has provided annual results for 9 years and reports on a fiscal year basis.

Data Source:

Data are provided by agencies with primacy (primary enforcement authority) for the Public Water System Supervision (PWSS) program. These agencies are either: States, EPA for non-delegated states or territories, and the Navajo Nation Indian tribe, the only tribe with primacy. Primacy agencies collect the data from the regulated water systems, determine compliance, and report a subset of the data to EPA (primarily inventory and summary violations).

Methods, Assumptions and Suitability:

Under the drinking water regulations, water systems must use approved analytical methods for testing for contaminants. State certified laboratories report contaminant occurrence to states that, in turn, determine exceedances of maximum contaminant levels or non-compliance with treatment techniques and report these violations to EPA. These results are subject to periodic performance audits and compared to results that states report to SDWIS. Primacy agencies' information systems and compliance determinations are audited on an average schedule of once every 3 years, according to a protocol. To measure program performance, EPA aggregates the SDWIS data into national statistics on overall compliance with health-based drinking water standards using the measures identified above.

QA/QC Procedures:

EPA conducts a number of Quality Assurance/Quality Control steps to provide high quality data for program use, including:

- SDWIS-FED edit checks built into the software to reject erroneous data.
- Quality assurance manuals for states and Regions, which provide standard operating procedures for conducting routine assessments of the quality of the data, including timely corrective action(s).
- Training to states on reporting requirements, data entry, data retrieval, and error correction.
- User and system documentation produced with each software release and maintained on EPA's web site. System, user, and reporting requirements documents can be found on the EPA web site, www.epa.gov/safewater/. System and user documents are accessed via the database link www.epa.gov/safewater/databases.html, and specific rule reporting requirements documents are accessed via the regulations, guidance, and policy documents link www.epa.gov/safewater/regs.html.
- Specific error correction and reconciliation support through a troubleshooter's guide, a system-generated summary with detailed reports documenting the results of each data submission, and an error code database for states to use when they have questions on how to enter or correct data.
- User support hotline available 5 days a week.

The SDWIS-FED equivalent of a quality assurance plan is the data reliability action plan[2] (DRAP). The DRAP contains the processes and procedures and major activities to be employed and undertaken for assuring the data in SDWIS meet required data quality standards. This plan has three major components: assurance, assessment, and control.

Data Quality Review:

SDWIS data quality was identified as an Agency weakness in 1999 and has a corrective action completion target date that extends to 2007. SDWIS' weaknesses center around five major issues: 1) completeness of the data (e.g., the inventory of public water systems, violations of maximum contaminant levels, enforcement actions) submitted by the states, 2) timeliness of the data sent by the states, i.e., if states do not report at specified times, then enforcement and oversight actions suffer, 3) difficulty receiving data from the states, 4) both cost and difficulty processing and storing data in SDWIS after it has been received, and 5) difficulty getting SDWIS data for reporting and analysis. Two (2000 and 2003) Data Reliability Action Plans focus on the first two issues, and an information strategic plan[3] (ISP) has been developed and is being implemented to address the last three issues, which deal primarily with technology (hardware and software) concerns. For instance, the ISP documents ways to improve tools and processes for creating and transferring data to EPA. The ISP incorporates newer technologies and adapts the Agency's Enterprise Architecture Plan to integrate data and allow the flow of data from reporting entities to EPA via the Agency's secure central data exchange (CDX) environment. Detailed activities and implementation schedules are included in these documents, and the Agency expects to implement these additional improvements by the end of 2005.

Routine data quality assurance and quality control (QA/QC) analyses of the Safe Drinking Water Information System (SDWIS) by the Office Water (OW) have revealed a degree of non-reporting of violations of health-based drinking water standards, and of violations of regulatory monitoring and reporting requirements (discussed further under Data Limitations). As a result of these data quality problems, the baseline statistic of national compliance with health-based drinking water standards likely is lower than previously reported. The Agency is engaged in statistical analysis and in discussions with states to more accurately quantify the impact of these data quality problems on the estimate of national compliance with health-based drinking water standards. Even as improvements are made, SDWIS serves as the best source of national information on compliance with Safe Drinking Water Act requirements for program management, the development of drinking water regulations, trends analyses, and public information.

Data Limitations:

Recent state data verification and other quality assurance analyses indicate that the most significant data quality problem is under-reporting of monitoring and health-based standards violations and inventory characteristics. The most significant under-reporting occurs in monitoring violations. Even though those are not covered in the health based violation category, which is covered by the performance measure, failures to monitor could mask treatment technique and MCL violations. Such under-reporting of violations limits EPA's ability to: 1) accurately portray the amount of people affected by health-based violations, 2) undertake geo-spatial analysis, 3) integrate and share data with other data systems, and 4) precisely quantify the population served by systems, which are meeting the health-based standards. Therefore, the estimates of population-served could be high or low. As described in the Data Quality Review section above, EPA is currently changing the protocol to enhance the results of data audits as the best near-term option to improve these estimates, while continuing to explore other approaches, including use of contaminant occurrence data.

Error Estimate:

EPA will be analyzing data, derived from the improved data audit protocol, with a robust statistical basis from which to extrapolate national results, and better aligned with requirements of the Data Quality Act. The long-term value of the improved audit process is that each year's results will be statistically representative and provide information closer in time to the needed performance reporting; for example, 2005 results, the first year of the improved audit process will be reported in 2006.

New/Improved Data or Systems:

Several approaches are underway. First, EPA will continue to work with states to implement the DRAP and ISP, which have already improved the completeness, accuracy, timeliness, and consistency of the data in SDWIS-FED through: 1) training courses for specific compliance determination and reporting requirements, 2) state-specific technical assistance, 3) increased number of data audits conducted each year, and 4) assistance to regions and states in the identification and reconciliation of missing, incomplete, or conflicting data.

Second, more states (from 30 to 40 by year-end 2005) will use SDWIS-STATE,[4] a software information system jointly designed by states and EPA, to support states as they implement the drinking water program.

Third, EPA has modified SDWIS-FED to (1) simplify the database, (2) minimize data entry options resulting in complex software, (3) enforce Agency data standards, and (4) ease the flow of data to EPA through a secure data exchange environment incorporating modern technologies, all of which will improve the accuracy of the data. In 2006, full use of SDWIS-FED for receiving state reports will be implemented. Data will be stored in a data warehouse system that is optimized for analysis, data retrieval, and data integration from other data sources. It will improve the program's ability to more efficiently use information to support decision-making and effectively manage the program.

Finally, EPA, in partnership with the states, is developing information modules on other drinking water programs: the Source Water Protection Program, the Underground Injection Control Program (UIC), and the Drinking Water State Revolving Fund. These modules will be integrated with SDWIS to provide a more comprehensive data set with which to assess the nation's drinking water supplies, a key component of the goal. In 2003, agreement was reached on the data elements for reporting source water and UIC data. Plans have now been developed for design of systems to address these data flows. Developing the systems to receive the data is scheduled for 2005.

References:

Plans[5]

SDWIS-FED does not have a Quality Assurance Project Plan—it is a legacy system which has "evolved" since the early 80s prior to the requirement for a Plan. The SDWIS-FED equivalent is the Data Reliability Action Plan

Information Strategy Plan—SDWIS-FED (see footnote 2)

Office of Water Quality Management Plan, available at www.epa.gov/water/info.html

Enterprise Architecture Plan

Reports[5]

1999 SDWIS/FED Data Reliability

2003 SDWIS/FED Data Reliability Report—contains the Data Reliability Action Plan and status report

PWSS Management Report (quarterly)

1999 Management Plan Review Report

2003 Management Plan Review Report

Guidance Manuals, and Tools

- PWSS SDWIS/FED Quality Assurance Manual
- Various SDWIS-FED User and System Guidance Manuals (includes data entry instructions, data On-line Data Element Dictionary-a database application, Error Code Data Base (ECDB)—a database application, users guide, release notes, etc.) Available on the Internet at: www.epa.gov/safewater/sdwisfed/sdwis.htm
- Regulation-Specific Reporting Requirements Guidance. Available on the Internet at www.epa.gov/safewater/regs.html
- Web site addresses
- OGWDW Internet Site www.epa.gov/safewater/databases.html and contains access to the information systems and various guidance, manuals, tools, and reports.
- Sites of particular interest are: www.epa.gov/safewater/data/getdata.html contains information for users to better analyze the data, and www.epa.gov/safewater/sdwisfed/sdwis.htm contains reporting guidance, system and user documentation and reporting tools for the SDWIS-FED system.

FY 2005 PERFORMANCE MEASURE:

Percentage of source water areas for community water systems that achieve minimized risk to public health (minimized risk achieved by substantial implementation, as determined by the state, of source water protection actions in a source water protection strategy).

Performance results related to these measures are presented in Goal 2, page 78.

Performance Database:

The source water assessment and protection programs are authorized under Sections 1453, 1428, and relevant subsections of 1452 of the Safe Drinking Water Act (SDWA).[6] EPA issued guidance to implement these programs in 1997, *State Source Water Assessment and Protection Programs Guidance.*[7] In March 2005, EPA issued supplemental reporting guidance, *"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance."* Starting in FY 2005, and updated annually thereafter, states report to EPA on the results of their source water assessment programs (SWAPs) and progress in implementing source water protection (SWP) strategies, and whether such strategy implementation is affecting public health protection. *To assess the results of the SWAPs,* state reporting includes three elements: (1) the delineated source water areas around each well and intake, (2) whether the assessments are complete, and (3) most prevalent and most threatening sources of contamination. To assess *progress in implementing the SWP strategies*, state reporting includes two elements: (1) whether a prevention strategy for Community Water System source water areas has been adopted, and is being implemented and (2) whether such strategy implementation has reached a substantial level. To assess *whether the program is affecting public health protection*, states report change in the number of source water areas with substantially implemented source water protection strategies. The Agency will develop a national summary of data on the progress of states' source water protection programs using these data elements in early 2006.

In FY 2003, EPA maintained pilot state-level summary data for each of these elements in a spreadsheet format and this format will be used for reporting for FY 2005. Beginning in FY 2005, states may, at their option, make available to EPA public water system-level data for each of these elements to be maintained in a set of data tables in the drinking water warehouse (for tabular data) and in event tables in the Office of Water's Reach Address Database (RAD)[8] (GIS data). These data will be compatible with the inventory data States are currently reporting to the Safe Drinking Water Information System (SDWIS).[9] Three states piloted this approach in 2003. [Not publicly available. Contact the Drinking Water Protection Division at 202-564-3797.]

Data Source:

Up to the end of FY 2004, states reported to the EPA Regional Offices the percentage of community water systems implementing source water protection programs. EPA has developed a new source water data module to collect, store, and use public water system-level data received from states, but it may be refined as more states voluntarily use it over the next 3 years of the Strategic Plan.—See section "New/Improved Data or Systems."

Methods, Assumptions and Suitability:

For this measure, the states' reporting of progress in implementing their source water assessment and protection programs will be based on EPA's 2005 guidance, *"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance."* States will only report state-level summary information directly related to specific community water systems in a state-level database. Because state reporting will be based on consistent definitions and procedures found in the *"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance,"* EPA believes that the data will be reliable for use in making management decisions.

QA/QC Procedures:

QA/QC procedures are included in the 2005 *"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance."* Additionally, a series of data checks are built into the spreadsheet data collection procedures given to each Region for their work with states. States will be required to identify whether their reported summary-level data are based on a system-level database. EPA Regional offices also will work with individual states to obtain a description of their methods of collecting and verifying information.

Data Quality Reviews:

EPA Regions will conduct data quality reviews of state data using the QA/QC procedures included with the spreadsheet-based data system, and work with states to resolve data issues. As a result, EPA expects the quality of data on the results of the assessments and source water protection activities to improve over time.

Data Limitations:

Because the initial reporting provides only state-level summary information, there is no standard protocol for EPA to verify and validate the data against system-level information contained in state databases. In addition, much of the data reported by states is voluntary and based on working agreements with EPA because SDWA only requires states to complete source water assessments. The only source water information that states are required to report to EPA under SDWA is whether the assessments are completed. Although EPA's 2005 "State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance" set standard data definitions and procedures, it also provides for considerable flexibility in states' data collection protocols and analytical methods to evaluate their data. For example, some states may require each public water system to report data, while others may institute a voluntary process. Because much of the data reporting is voluntary and the individual state protocols

may vary, state data may be incomplete and inconsistent across states.

New/Improved Data or Systems:

The source water module has been developed as a joint initiative between EPA, the Association of State Drinking Water Administrators (ASDWA), and the Ground Water Protection Council (GWPC). It will give EPA the ability to access the data directly from states through a data exchange agreement using an electronic data transfer capability. A state may choose, at its option, to provide EPA more detailed data in lieu of state-level summary reporting. The new source water data module will be integrated into the drinking water data warehouse and be compatible with Safe Drinking Water Information System (SDWIS) data already reported by states. Geospatial data (i.e., the intake and well point locations and the source water area polygons) will be maintained in EPA's Office of Water's Reach Access Database (RAD). The source water assessment and protection indicator data and other attribute data will be maintained in data tables in the drinking water warehouse. The source water data module is operational for states to pilot from FY 2005 through FY 2008. Three states used the module in the first pilot year 2003. A number of other states may report using the data module for the 2005 reporting period based on EPA/ASDWA/GWPC pilot process.

References:

Guidance Manuals

U.S. EPA, Office of Water. *State Source Water Assessment and Protection Programs Guidance*. EPA 816-R-97-009 (Washington: US EPA, August 1997). Available on the Internet at www.epa.gov/safewater/swp/swappg.html *Source Water Assessment and Protection Measures: Initial Guidance, August, 2003.*

"State and Federal Source Water Assessment and Protection Program Measures: Final Reporting Guidance," March 2005.

Web site addresses

US EPA Office of Ground Water and Drinking Water. www.epa.gov/safewater

For more detailed information on Source Water topics, US EPA Office of Ground Water and Drinking Water, Source Water site. www.epa.gov/safewater/protect.html

US EPA Office of Water (OW) Reach Access Database (RAD). Watershed Assessment, Tracking & Environmental Results (WATERS). www.epa.gov/waters/ Safe Drinking Water Information System (SDWIS). www.epa.gov/safewater/databases.html

FY 2005 PERFORMANCE MEASURE:

Percentage of the water miles/acres identified by States or Tribes as having fish consumption advisories in 2002 where increased consumption of safe fish is allowed. (485, 205 river miles, 11,277,276 lake acres.

Performance results related to these measures are presented in Goal 2, page 79.

Performance Database:

National Listing of Fish Advisories.[1] The database includes fields identifying the waters for which fish consumption advisories have been issued. The fields also identify the date upon which the advisory was issued, thus allowing an assessment of trends. The National Hydrographic Data (NHD) are used to calculate the spatial extent of the fish advisory. This information is updated continually as states and tribes issue or revise advisories. The National Listing of Fish Advisories database includes records showing that 846,310 river miles and 14,195,187 lake acres were identified by states or tribes in calendar year 2003 as having fish with chemical contamination levels resulting in an advisory of potential human health risk from consumption. States and tribes report data on a calendar year basis. The calendar year data are then used to support the fiscal year (FY) commitments (e.g., calendar year 2005 data support the FY 2007 commitments). Metadata are also available describing methodologies used by states and tribes for establishing advisories. Fish advisory data have been collected since 1993.

Data Source:

State and Tribal Governments. These entities collect the information and enter it directly into the National Listing of Fish Advisories database. EPA reviews advisory entries, including the states' or tribes' responses to an on-line survey, which support the advisory decision.

Methods, Assumptions and Suitability:

The performance measure is calculated as the aggregate surface area covered by one or more individual advisories divided by the total waters of each state or territory. If a waterbody is covered by more than one advisory it is only counted once, and until all advisories are removed the waterbody is counted as having an advisory. The states and tribes submit the area data to the National Listing of Fish Advisories database.

QA/QC Procedures:

A standard survey, which has been approved by OMB, is available on the Internet for electronic submission. A password is issued to ensure the appropriate party is completing the survey. EPA has national guidance[2,3] for states and tribes on developing and implementing quality assurance practices for the collection of environmental information related to fish advisories. This guidance helps assure data quality of the information that states and tribes use to decide whether to issue an advisory. The Office of Water's "Quality Management Plan," approved in September 2001 and published in July 2002[4], is general guidance that applies to information collection.

Data Quality Reviews:

EPA reviews advisory entries and responses to the survey to ensure the information is complete, then follows-up with the state or local government to obtain additional information where needed. However, the Agency cannot verify the accuracy of the voluntary information that state and local governments provide. There have been no external party reviews of this information.

Data Limitations:

There are two primary data limitations. First, participation in this survey and collection of data is voluntary. While the voluntary response rate has been high, it does not capture the complete universe of advisories. Puerto Rico, the Virgin Islands, and Guam do not report in the survey. Second, states have not assessed all waters for the need for advisories, so the information reported reflects a subset of water bodies in the state.

Error Estimate:

We are unable to provide an error estimate. Submitting data to the National Listing of Fish Advisories database is voluntary and the Agency cannot be certain that the database contains information on 100% of the assessed waters in the United States. Therefore, we may be understating the total amount of waters assessed, the magnitude of which is not known.

New/Improved Data or Systems:

EPA will use small grants to encourage states to investigate additional water bodies to determine if there is a need for fish consumption advisories. This will lead to a more complete characterization of the nation's fish safety. EPA will also begin tracking recommended "meal frequencies" in the state and tribal advisories to account for the instances where advisories are modified to allow greater consumption.

References:

U.S. EPA. Office of Water. "National Listing of Fish Advisories." Washington, DC: EPA Accessed May 1, 2003. Available only on the Internet at map1.epa.gov/.

U.S. EPA. Office of Water. "Fish Sampling and Analysis." Volume 1 of "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories." 3rd ed. EPA-823-B-00-007. Washington DC: EPA, 2000. Available at www.epa.gov/waterscience/fishadvice/volume1/.

U.S. EPA. Office of Water. "Risk Assessment and Fish Consumption Limits." Volume 2 of "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories." 3rd ed." EPA-823-B-00-008. Washington DC: EPA, 2000. www.epa.gov/waterscience/fishadvice/volume2/.

U.S. EPA. Office of Water. "Quality Management Plan." EPA 821-X-02-001. Washington, DC: EPA, July 2002. Available at www.epa.gov/water/programs/qmp_july2002.pdf.

FY 2005 PERFORMANCE MEASURE:

Percentage of the shellfish-growing acres monitored by states that are approved or conditionally approved for use.

Performance results related to these measures are presented in Goal 2, page 79.

Performance Database:

There is no database currently available, although one is under development (see below). Until that database is operational, data to support this measure will come from past surveys of States that are members of the Interstate Shellfish Sanitation Conference (ISSC), conducted at 5-year intervals and periodic updates requested from the Interstate Shellfish Sanitation Conference (most recent, 2003 data released in 2004).

Data Source:

Currently, the ISSC requests the data on approved acreages from shellfish producing states and prepares reports. Survey responses are voluntary.

Methods, Assumptions and Suitability:

The methods used by the state programs to produce the current data used by the ISSC are based on the National Shellfish Sanitation Plan and Model Ordinance; the operation of those state programs is overseen by the FDA.

QA/QC Procedures:

States are responsible for the internal QA/QC of their data.

Data Quality Reviews:

The ISSC reviews the state data during report preparation to ensure completeness and accuracy, and follows up with states where necessary.

Data Limitations:

Based on NOAA's previous surveys and the voluntary nature of the information collected, potential data limitations may include incomplete coverage of shellfish growing areas.

New/Improved Data or Systems:

The ISSC initiated development of the Shellfish Information Management System (SIMS) in July 2002. The database is being developed and implemented by the National Oceanographic and Atmospheric Administration (NOAA) on behalf of the Interstate Shellfish Sanitation Conference (ISSC), a Cooperative Program chartered by the Food and Drug Administration (FDA). The database will include relevant information that is collected by State Shellfish Control Authorities. Historically, NOAA collected shellfish-growing area data in 5-year intervals, 1985, 1990, and 1995. These data were not stored in a database. Once operational, SIMS will be the first national shellfish growing area database and will include NOAA's 1995 and 2003 data. State summary information can then be used to track trends relevant to the performance measure, with the 1995 data as the baseline. The SIMS database is designed as a real time database. The ISSC plans to request data updates annually, but states may update their data any time. These data may be accessed at any time so timely status reports can be generated.

Ten states were involved in the design of the database; six states have entered acreage data in the database. Seven additional states are working toward inputting their data. No long-term database management plan is in place at this time.

FY 2005 PERFORMANCE MEASURES:

Restore water quality to allow swimming in stream miles and lake acres identified by states in 2000 as having water quality unsafe for recreation.

Percentage of days of the beach season that coastal and Great Lakes beaches monitored by State beach safety programs will be open and safe for swimming.

Performance results related to these measures are presented in Goal 2, pages 80-81.

Performance Database:

The data are stored in PRAWN (Program tracking, beach Advisories, Water quality standards, and Nutrients), a database that includes fields identifying the beaches for which monitoring and notification information are available and the date the advisory or closure was issued, thus enabling trend assessments to be made. The database also identifies those states that have received a BEACH (Beaches Environmental Assessment and Coastal Health) Act [P.L. 106-284] grant. EPA reports the information annually, on a calendar year basis, each May. The calendar year data are then used to support fiscal year commitments (e.g., 2006 calendar year data are used to report against FY 2007 commitments). As of 2004, States and Territories monitor for pathogens at 3,574 coastal and Great Lakes beaches, up from 2,823 beaches in 2002[1].

Data Source:

Since 1997 EPA has surveyed state and local governments for information on their monitoring programs and on their advisories or closures. The Agency created the PRAWN database to store this information. State and local governmental response to the survey was voluntary up through calendar year 2002. Starting in calendar year 2003, data for many beaches along the coast and Great Lakes had to be reported to EPA as a condition of grants awarded under the BEACH Act[2]. Since 2005, states have used an on-line process called eBeaches to electronically transmit beach water quality and swimming advisory information to EPA instead of using the paper survey. The latest information reported by a state or local government is accessible to the public through the BEACON (Beach Advisory Closing On-line Notification) system.

Methods, Assumptions and Suitability:

The data are an enumeration of the days of beach-specific advisories or closures issued by the reporting state or local governments during the year. Performance against the target is tracked using a simple count of the number of beaches responding to the survey and the days over which the advisory or closure actions were taken. This is compared to the total number of days that every beach could be open. Thus the data are suitable for the performance measure.

QA/QC Procedures:

Since 1997, EPA has distributed a standard survey form, approved by OMB, to coastal and Great Lake state and county environmental and public health beach program officials in hard copy by mail. The form is also available on the Internet for web-entry electronic submission. When a state or local official enters data using the web-entry format, a password is issued to ensure the appropriate party is completing the survey. Currently the Agency has procedures for information collection (see Office of Water's "Quality Management Plan," approved September 2001 and published July 2002[3]). In addition, coastal and Great Lakes states receiving BEACH Act grants are subject to the Agency's grant regulations under 40 CFR 31.45. These regulations require states and tribes to develop and implement quality assurance practices for the collection of environmental information.

Data Quality Review:

EPA reviews the survey responses to ensure the information is complete, following up with the state or local government to obtain additional information where needed. The Agency also reviews the QA/QC reports submitted by States and Territories as part of their grant reporting. There have been no external party reviews of this information.

Data Limitations:

From calendar year 1997 to calendar year 2002, participation in the survey and submission of data has been voluntary. While the voluntary response rate has been high, it has not captured the complete universe of beaches. The voluntary response rate was 92% in calendar year 2002 (240 out of 261 contacted agencies responded). The number of beaches for which information was collected increased from 1,021 in calendar year 1997 to 2,823 in calendar year 2002. Participation in the survey is now a mandatory condition for implementation grants awarded under the BEACH Act program to coastal and Great Lakes states. Except for Alaska, all coastal and Great Lakes states and territories have annually applied for implementation grants since they have been available.

Error Estimate:

As of 2004, States and Territories report that they monitor at 3,574 of the 6,099 coastal and Great Lakes beaches. This monitoring varies between States. For example, North Carolina monitors all its 228 beaches whereas South Carolina monitors 24 of 229 beaches. Where monitoring is done, there is some chance that the monitoring may miss some instances of high pathogen concentrations. EPA's 2002 National Health Protection Survey of Beaches found that 90% of the nation's beaches are monitored once a week or less[4]. Studies in southern California found that weekly sampling missed 75% of the pathogen exceedances[5], and that 70% of the exceedances lasted for only one day[6]. An EPA Office of Research and Development (ORD) beach monitoring study found a positive correlation between pathogen indicator densities one day as compared to densities the next day, but that the correlation was negligible when compared to densities after four days[7]. These studies indicate that weekly sampling most likely misses many pathogen events that can affect public health. This information is not sufficient to calculate the potential error in the reporting, but it is sufficient to indicate that the reporting may

understate the number of days that beaches should be closed or under advisory.

New/Improved Data or Systems:

Participation in the survey is now a mandatory condition for grants awarded under the BEACH Act program. As the Agency awards these implementation grants, it will require standard program procedures, sampling and assessment methods, and data elements for reporting. To the extent that state governments apply for and receive these grants, the amount, quality, and consistency of available data will improve. In FY 2007, EPA expects the 35 coastal and Great Lakes states to apply for grants to implement monitoring and notification programs.

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Goal 2, Objective 2

FY 2005 PERFORMANCE MEASURE:

Watersheds in which at least 80 percent of the assessed water segments meet water quality standards.

Performance results related to these measures are presented in Goal 2, page 82.

Performance Database:

The Watershed Assessment Tracking Environmental Results System (WATERS) (1) is used to summarize water quality information at the watershed level. For purposes of this national summary, watersheds are equivalent to 8-digit hydrologic unit codes (HUCs), of which there are 2,262 nationwide although data may be disaggregated to smaller watersheds should the need arise. WATERS is a geographic information system that integrates many existing databases including the STOrage and RETrieval (STORET) database (2), the National Assessment Database (NAD)(3), and the Water Quality Standards database (4). Water quality information available through WATERS includes data submitted by the states under Clean Water Act (CWA) Section 305(b) reports. Data from the NAD includes waterbody type, location, extent, and the designated uses assessed, as well as the assessment conclusion. NAD data are available for most areas as far back as the year 2000 assessment cycle. Data gaps expected include incomplete state assessments and uncertain state adoption of the data formats inconsistent with the National Assessment Database. The data are submitted to EPA every 2 years, with annual electronic updates. The U.S. EPA provides access to the states' data on its Monitoring Program website. (5)

Data Source:

State CWA Section 305(b) reports. Under the Clean Water Act, the states are given the responsibility for setting water quality standards for their waters and collecting the data and information to assess the condition of those waters. The data collected by states to assess water quality and to prepare their CWA Section 305(b) reports come from multiple sources, e.g., state monitoring networks, United States Geological Survey (USGS), local governments, volunteer monitors, academic institutions, etc. States also use predictive tools, such as landscape and water quality models, and randomized probability surveys. [Raw water quality data may be entered by states and other sources into STORET.] States use ambient monitoring data to determine if their waters are attaining the state's water quality standards. States are encouraged to use three EPA data systems to structure and transfer these data. The first of these is the Water Quality Standards Database, which records the designated uses and supporting criteria for specifically defined waterbody segments contained in the second dataset, the National Hydrography Dataset (NHD). These segments, each defined by states, are described using a structure that EPA conceived two decades ago, but now has divested to its partner, the U.S. Geological Survey; The NHD provides important address points that can define the extent (for instance, by defining the upstream and downstream boundaries of a beach) of waterbodies that have been assigned consistent standards. The NHD also allows important features such as outfalls, intakes, and dams to be located so that they can be mapped and better understood. It also allows administrative designations to be located, such as the boundaries of assessments made to determine whether the waters meet the standards assigned to a waterbody. Results of assessments are

entered into the third database, the National Assessment Database. The National Assessment Database is used to assemble performance statistics for each biennial (calendar year) reporting cycle: 2000, 2002, 2004 and (planned) 2006. Results are calculated on the basis of these biennial reports. Long delays are often encountered in state submissions, causing delays in EPA's development of summary statistics. EPA is working to establish more certain procedures to prevent future delays.

EPA provides access to WATERS on its monitoring website. However, given differences among state water quality standards and monitoring methods, the results of these assessments do not provide a reliable nationwide assessment of water quality conditions.

Methods, Assumptions and Suitability:

States employ various methods to make water quality assessment decisions, including: 1) Direct sampling of chemical, physical, and biological parameters using targeted site selection (usually, where problems are most likely or where water is heavily used); 2) Predictive models to estimate water quality; 3) Sampling at statistically valid, probability-based sites (in its early stages in a number of states) to assess broad scale water quality conditions; 4) Compilation of data from outside sources such as volunteer monitors, academic institutions, and others. EPA aggregates state assessment information by watershed (as described above) to generate the national performance measure. State assessment results describe attainment of designated uses in accordance with state water quality standards and represent a direct measure of performance. State CWA Section 305(b) data have been used to provide a summary of the ambient water quality conditions across the nation and to determine conditions in the subset of waters assessed. Geographically specific waterbody assessments are suitable for year-to-year comparisons of water quality attainment progress. As states continue to strengthen their monitoring and data management programs, more state data will be suitable for tracking changes in water quality over time. While programs are in transition, national performance data will be heavily influenced by changes in state data procedures.

QA/QC Procedures:

QA/QC of data provided by states in their individual assessments (under CWA Section 305(b)) and accessed through WATERS is dependent on individual state procedures. Numerous system level checks are built into the data sources in WATERS, based upon the business rules associated with the water quality standards database. States are given the opportunity to review the information to ensure it accurately reflects the data they submitted. Data exchange guidance and training are also provided to the states. Sufficiency threshold for inclusion in this measure requires that 20 percent of stream miles in an 8-digit HUC be assessed. The Office of Water Quality Management Plan (QMP), renewed every 5 years, was approved in July 2002 (6). It describes the quality system used by the Office of Water and applies to all environmental programs within the Office of Water and to any activity within those programs that involves the collection or use of environmental data.

Data Quality Review:

Numerous independent reports have cited that weaknesses in water quality monitoring and reporting undermine EPA's ability to depict the condition of waters nationwide, to make trend assessments, and to support scientifically sound water program decisions. The most recent reports include the 2004 GAO report on watershed management. General Accounting Office (GAO), 2004, *Watershed Management: Better coordination of data collection efforts needed to support key decisions:* Washington D.C., United States General Accounting Office, the 1998 *Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program* (7), the March 15, 2000 General Accounting Office report Water Quality: Key Decisions Limited by Inconsistent and Incomplete Data (8), the 2001 National Academy of Sciences Report, *Assessing the TMDL Approach to Water Quality Management* (9), a 2002 National Academy of Public Administration Report, *Understanding What States Need to Protect Water Quality* (10), and *EPA's Draft Report on the Environment* (11). Water quality reporting under Section 305(b) has been identified as an Agency-Level weakness under the Federal Managers Financial Integrity Act.

In response to these evaluations, EPA has been working with states and other stakeholders to improve: 1) data coverage, so that state reports reflect the condition of all waters of the state; 2) data consistency, to facilitate comparison and aggregation of state data to the national level; and 3) documentation, so that data limitations and discrepancies are fully understood by data users.

The Office of Water has limited authority to require better water quality monitoring or reporting by states. OW has recently issued several guidance documents designed to increase consistency and coverage in state monitoring, assessment and reporting. In July 2003, EPA issued its Integrated Reporting guidance (12) which calls on states to integrate the development and submission of 305(b) water quality reports and Section 303(d) lists of impaired waters. The Integrated Report will enhance the ability of water quality managers to display, access, and integrate environmental data and information from all components of the water quality program. In July 2002, EPA released the *Consolidated Assessment and Listing Methodology—a Compendium of Best Practices* (13), intended to facilitate increased consistency in monitoring program design and in the data and decision criteria used to support water quality assessments. And in March 2003, EPA issued *Elements of a State Water Monitoring and Assessment Program* (14), which describes ten elements that each state water quality monitoring program should contain and a 10-year time frame for implementing all elements. As part of each state's monitoring strategy, state data will be accompanied by quality assurance plans. Quality assurance is one of the ten required elements of these strategies.

EPA has enhanced two existing data management tools (STORET and the National Assessment Database) so that they include documentation of data quality information. EPA's WATERS tool integrates many databases including STORET, the National Assessment Database, and the Water Quality Standards Database. These integrated databases facilitate comparison and understanding of differences among state standards, monitoring activities, and assessment results. The Office of Water has recently convened and continues to use an

Assessment Data Visualization Work Group that is tracking the increased use of the three data systems and is planning to focus its orientation and training to expand the use of these data systems and to ensure regional review of the quality of states' data. Regions also will more closely review the coverage of monitoring needed to support state assessment activities. Until there is consistent, widespread use of these systems, the water quality conditions states report will be subject to procedure-induced variation that masks environmental progress.

Data Limitations:

Data do not represent an assessment of water quality conditions at the national level. EPA is working with states to provide a data structure that allows state assessments to be geographically located so that they can be clearly identified and changes can be tracked over time. EPA data systems being adopted by states implement this feature. Other disparities remain, however. Most states do not employ a monitoring design that characterizes all waters in each reporting cycle, and some states only report the results of the most recent assessments without providing the perspective of water quality from previous assessments. States, territories, and tribes collect data and information on only a portion of their water bodies because it is prohibitively expensive to monitor all water bodies. Furthermore, states do not use a consistent suite of water quality indicators to assess attainment with water quality standards. For example, indicators of aquatic life use support range from biological community condition to levels of dissolved oxygen and concentrations of toxic pollutants. State water quality standards themselves vary from state to state. State assessments of water quality may include uncertainties associated with their measured or modeled data. These variations in state practices and standards limit the use of assessment reports for describing water quality at the national level and prevent the agency from aggregating water quality assessments at the national level with known statistical confidence.

New/Improved Data or Systems:

The Office of Water is currently working with states, tribes and other Federal agencies to improve the data that support this management measure by addressing the underlying methods of monitoring water quality and assessing the data. Also, the Office of Water is working with partners to enhance monitoring networks to achieve comprehensive coverage of all waters, use a consistent suite of core water quality indicators (supplemented with additional indicators for specific water quality questions), and document key data elements, decision criteria and assessment methodologies in electronic data systems. The Office of Water is using a variety of mechanisms to implement these improvements including data management systems, guidance, stakeholder meetings, training and technical assistance, program reviews and negotiations.

EPA is working with states to enhance their monitoring and assessment programs, and promoting the use of probability surveys as a cost-effective way to obtain a snapshot of water quality conditions. These enhancements, along with improving the quality and timeliness of data for making watershed-based decisions, will improve EPA's ability to use state assessments in portraying national conditions and trends. Specific state refinements include developing biological criteria to measure the health of aquatic communities (and attainment with the aquatic life use) and designing probability-based monitoring designs to support statistically valid inferences about water quality. EPA has been instrumental in helping states design the monitoring networks and analyze the data. Initial efforts have focused on coastal/estuarine waters and wadeable streams. Lakes will be targeted next. States are implementing these changes incrementally and in conjunction with traditional targeted monitoring. At last count, 16 states have adopted probability-based monitoring designs, several more are evaluating them, and all but 10 are collaborating with EPA to undertake a national probability survey of conditions of wadeable streams at a national level.

In FY2005 EPA's budget included a $10 million increase to support states' implementation of comprehensive water quality monitoring strategies, including refinement of biological assessment methods and probability-based designs for different water resource types; landscape models and other predictive tools; remote sensing and innovative indicators of water quality to help streamline where additional monitoring is needed; and targeted monitoring to provide data to implement local management actions such as National Pollution Discharge Elimination Program (NPDES) permits and Total Maximum Daily Loads (TMDLs). The initiative also supports improvement of data management systems to ensure that water quality monitoring data are understandable and available to decision makers and the public. Included were upgrades to STORET, to improve system navigation and operation and to enhance analysis and presentation applications. Funds also supported enhancing the capability to exchange water quality data with states. EPA's FY06 budget included a request for $18 million to support state's monitoring programs.

References:

- WATERS available on-line at www.epa.gov/waters. Aggregate national maps and state and watershed specific data for this measurement are displayed numerically and graphically in the WATERS database.
- STORET available online at www.epa.gov/STORET. Links to user guide and descriptions of the database can be found here.
- National Assessment Database information available at www.epa.gov/waters/305b/
- Water Quality Standards Database information available at www.epa.gov/wqsdatabase/
- State 305(b) Report information—www.epa.gov/owow/monitoring/reporting.html
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FY 2005 PERFORMANCE MEASURE:

Water quality standards are fully attained in miles/acres of waters identified in 2000 as not attaining standards.

Performance results related to these measures are presented in Goal 2, page 83.

Performance Database:

The Watershed Assessment Tracking Environmental Results System (WATERS–found at www.epa.gov/waters/) is EPA's approach for viewing water quality information related to this measure. WATERS can be used to view "303(d) Information," compiled from, *States' Listings of Impaired Waters as Required by Clean Water Act Section 303(d)* (referred to here in brief as "303(d) lists"), which are recorded in the national TMDL Tracking System (NTTS). This information (found at www.epa.gov/owow/tmdl/status.html) is used to generate reports that identify waters that are not meeting water quality standards ("impaired waters"). This information, combined with information and comment from EPA Regions and states, yields the baseline data for this measure: number of impaired waters in 1998/2000. As Total Maximum Daily Loads (TMDL) and other watershed-related activities are developed and implemented, water bodies which were once impaired will meet water quality standards, and thus will be removed from the year 98/2000 impaired totals. Changes will be recorded in reports, scheduled every 6 years (e.g. future reporting years 2006 and 2012), as percentage improvements to water body impairment.

Data Source:

The underlying data source for this measure is State 303(d) lists of their impaired water bodies. These lists are submitted with each biennial (calendar year) reporting cycle. The baseline for this measure is the 1998 list (States were not required to submit lists in 2000; however, if states did submit a 2000 list, then that more recent list was used as the baseline). States prepare the lists using actual water quality monitoring data, probability-based monitoring information, and other existing and readily available information and knowledge the state has, in order to make comprehensive determinations addressing the total extent of the state's water body impairments. Once EPA approves a state's 303(d) list, EPA enters the information into WATERS, as described above. Delays are often encountered in state submissions and in EPA's approval of these biennial submissions. Establishing more certain procedures to keep on schedule is being considered.

Methods, Assumptions, and Suitability:

States employ various analytical methods of data collection, compilation, and reporting including: 1) Direct water samples of chemical, physical, and biological parameters; 2) Predictive models of water quality standards attainment; 3) Probabilistic models of pollutant sources; and 4) Compilation of data from volunteer groups, academic interests and others. EPA-supported models include BASINS, QUAL2E, AQUATOX, and CORMIX. Descriptions of these models and instructions for their use can be found at www.epa.gov/OST. The standard operating procedures and deviations from standard methods for data sampling and prediction processes are stored by states in the STORET database. EPA aggregates state data to generate the national performance measure. State-provided data describe attainment of designated uses in accordance with state water quality standards and thus represent a direct measure of performance. Delays are often encountered in state 303d lists and 305b submissions, and in EPA's approval of the 303(d) portion of these biennial submissions. Establishing more certain procedures to prevent these delays is being considered.

QA/QC Procedures:

QA/QC of data provided by states pursuant to individual state 303(d) lists (under CWA Section 303(d)) is dependent on individual state procedures. EPA regional staff interacts with the states during the process of approval of the lists and before the information is entered into the database to ensure the integrity of the data. The Office of Water Quality Management Plan (QMP), renewed every 5 years, was approved in July 2001. EPA requires that each organization prepare a document called a quality management plan (QMP) that: documents the organization's quality policy; describes its quality system; and identifies the environmental programs to which the quality system applies (e.g., those programs involved in the collection or use of environmental data).

Data Quality Review:

Numerous independent reports have cited that weaknesses in monitoring and reporting of monitoring data undermine EPA's ability to depict the condition of the Nation's waters and to support scientifically sound water program decisions. The most recent reports include the 1998 *Report of the Federal Advisory Committee on the Total Maximum Daily Load (TMDL) Program*[10], the March 15, 2000 General Accounting Office report *Water Quality: Key Decisions Limited by Inconsistent and Incomplete Data*[11], the 2001 National Academy of Sciences Report Assessing the TMDL *Approach to Water Quality Management*[12] and EPA's *Draft Report on the Environment.*[13]

In response to these evaluations, EPA has been working with states and other stakeholders to improve: 1) data coverage, so that state reports reflect the condition of all waters of the state; 2) data consistency to facilitate comparison and aggregation of state data to the national level; and 3) documentation so that data limitations and discrepancies are fully understood by data users.

First, EPA enhanced two existing data management tools (STORET and the National Assessment Database) so that they include documentation of data quality information.

Second, EPA has developed a GIS tool called WATERS that integrate many databases including STORET, the National Assessment database, and a new water quality standards database. These integrated databases facilitate comparison and understanding of differences among state standards, monitoring activities, and assessment results.

Third, EPA and states have developed a guidance document: Consolidated Assessment and Listing Methodology—a Compendium of Best Practices[14] intended to facilitate increased consistency in monitoring program design and the data and decision criteria used to support water quality assessments.

Fourth, the Office of Water (OW) and EPA's Regional Offices have developed the *Elements of a State Water Monitoring and Assessment Program,* (August 2002) which is currently under review by our state partners. This guidance describes ten elements that each state water quality-monitoring program should contain and proposes time-frames for implementing all ten elements.

Data Limitations:

Data may not precisely represent the extent of impaired waters because states do not employ a monitoring design that monitors all their waters. States, territories and tribes collect data and information on only a portion of their water bodies. States do not use a consistent suite of water quality indicators to assess attainment of water quality standards. For example, indicators of aquatic life use support range from biological community assessments to levels of dissolved oxygen to concentrations of toxic pollutants. These variations in state practices limit how the CWA Sections 305(b) reports and the 303(d) lists provided by states can be used to describe water quality at the national level. There are also differences among their programs, sampling techniques, and standards.

State assessments of water quality may include uncertainties associated with derived or modeled data. Differences in monitoring designs among and within states prevent the agency from aggregating water quality assessments at the national level with known statistical confidence. States, territories, and authorized tribes monitor to identify problems and typically lag times between data collection and reporting can vary by state.

New/Improved Data Systems:

The Office of Water has been working with states to improve the guidance under which 303(d) lists are prepared. EPA issued new listing Guidance July 21, 2003 entitled *Guidance for 2004 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act* (Guidance). The Agency expects to release updated Guidance for 2006 by the end of FY05. The current Guidance may be found at: www.epa.gov/owow/tmdl/tmdl0103/index.html. The Guidance addresses a number of issues that states and EPA identified during the 2002 listing cycle. Among these issues are minimum data requirements and sample size requirements in making listing determinations, use of probability-based sampling in the state's monitoring program, improved year-to-year consistency in a choice of a geo-referencing scheme, and use of a consistent method of segmenting water bodies and denoting changes to the segmentation between listing cycles.

FY 2005 PERFORMANCE MEASURE:

Number of monitoring stations in Tribal waters that show at least a 10% improvement in each of 4 key parameters: total nitrogen, total phosphorus, dissolved oxygen and fecal coliform.

Performance results related to these measures are presented in Goal 2, page 84.

Performance Database:

All of the monitoring stations originally included in the baseline for this measure (900) are United States Geological Survey (USGS) stations with USGS station identification numbers. In the time since the 900 sites were originally identified, additional monitoring stations on Tribal lands have been located. The water quality monitoring results for the additional stations on Tribal lands are recorded in the USGS National Water Information System (NWIS) and EPA's Storage and Retrieval database (STORET). Through STORET and NWIS, EPA and USGS have established standardized formats for reporting water quality data and information.

Data on total nitrogen, total phosphorus, dissolved oxygen and fecal coliform are readily available through the STORET (www.epa.gov/STORET) and the NWIS (waterdata.usgs.gov/nwis/) websites for those monitoring stations in Tribal waters where these data have been collected and loaded into the databases.

Data Source:

Monitoring activities at the sampling stations included in this measure are not conducted or reported by Tribes. Sampling is performed at these monitoring stations by a variety of entities, for a variety of purposes and with differing frequencies. The proximity of these stations to watersheds undergoing restoration/protection activities may not be included as part of the information included in the STORET database or NWIS. The use of these monitoring stations in this performance measure is opportunistic, and thus sampling results may not necessarily reflect the impacts of restoration activities performed as part of the implementation of Clean Water Act programs by Tribes.

Methods, Assumptions and Suitability:

Sampling is performed at these monitoring stations by a variety of entities, for a variety of purposes and with differing frequencies. Methods used to measure total nitrogen, total phosphorus, dissolved oxygen and fecal coliform among these sites likely differ. However, metadata for sampling results, including sampling methods, detection limits and sampling date and time, are readily available to the public through the STORET database and NWIS. Given that the measure is based on improvements in water quality at individual monitoring stations in tribal lands over time, the use of differing methods at sampling stations included in the measure is not necessarily problematic. Sampling results at these stations are likely to be suitable for tracking progress in the measure. Implicit in the measure is the assumption that improvements in water quality at these sampling stations reflect the successful implementation of CWA programs by Tribes. The monitoring stations included in the measure are used for a variety of purposes and with differing frequencies and the proximity of the monitoring stations to waters undergoing restoration/protection actions by Tribes is unknown. Given this, the suitability of sampling results at these stations for tracking successful implementation of CWA programs by Tribes is uncertain.

QA/QC Procedures:

Samples at the monitoring stations included in this measure are collected and processed by a variety of entities and for differing purposes. As a result, QA/QC procedures for these samples may differ considerably. However, QA/QC procedures for the samples are readily available to the public through the STORET website or obtained from the USGS.

Data Quality Review:

Data owners are responsible for data quality review. Information on the quality of the data in STORET is readily available to the public through the website. The USGS is responsible for data quality review of sampling results loaded in the NWIS. No audits or data quality reviews for the monitoring results included in this measure have been conducted by EPA for data in the STORET or NWIS database.

Data Limitations:

It is still early to determine the full extent of data limitations. The monitoring stations included in the universe for this measure have been selected opportunistically by EPA based on their presence on Tribal lands and reporting sampling results for total nitrogen, total phosphorus, dissolved oxygen and fecal coliform. Sampling is performed at these monitoring stations by a variety of entities and for a variety of purposes with differing frequencies. The proximity of these stations to watersheds undergoing restoration/protection activities may not be included as part of the information included on the STORET or NWIS databases. Sampling results may not necessarily reflect the impacts of restoration activities performed as part of the implementation of Clean Water Act programs by Tribes. The impact of these data limitations on progress as reported in the measure is unclear.

New/Improved Data or Systems:

EPA has significantly improved the ease of data retrieval from the STORET database with the completion of the STORET data warehouse. Sampling results are being loaded into STORET at a rate of approximately 1 million records/month, which will significantly increase the data available to track progress in the measure. EPA is currently conducting a pilot project to prototype flow of water quality data to EPA via the central data exchange. The Wind River Reservation is participating as a pilot partner. EPA's intent is to build on the results of the pilot project to provide greater flexibility for partners who submit water quality data to EPA. We anticipate that this effort will help to increase the volume of tribal data in EPA's water quality data warehouse and will provide a more robust database for this measure. EPA and USGS will continue to work together to create a common view for data included in EPA's water quality data warehouse and the USGS NWIS database. This work also will facilitate the ability to measure progress.

References:

Water quality data in STORET are publicly available at www.epa.gov/STORET. Water quality data from USGS are available at waterdata.usgs.gov/nwis/.

FY 2005 PERFORMANCE MEASURE:

Number of households on tribal lands lacking access to basic sanitation.

Performance results related to these measures are presented in Goal 2, page 84.

Performance Database:

Sanitation Tracking and Reporting System (STARS), the Indian Health Service (IHS), Office of Environmental Health and Engineering (OEHE), Division of Sanitation Facilities Construction (DSFC).

Data Sources:

The STARS includes data on sanitation deficiencies, Indian homes and construction projects. STARS is currently comprised of two sub data systems, the Sanitation Deficiency System (SDS) and the Project Data System (PDS).

The SDS is an inventory of sanitation deficiencies for existing Indian homes and communities. The IHS is required to prioritize SDS deficiencies and annually report to Congress. The identification of sanitation deficiencies can be made several ways, the most common of which follow:

- Consultation with Tribal members and other Agencies
- Field visits by engineers, sanitarians, Community Health Representatives (CHRs), nurses, or by other IHS or tribal heath staff
- Sanitary Surveys
- Community Environmental Health Profiles
- Bureau of Indian Affairs (BIA) Inventory
- Census Bureau Reports (for comparison purposes only)
- Tribal Master Plans for Development
- Telephone Surveys
- Feasibility Studies

The most reliable and preferred method is a field visit to each community to identify and obtain accurate numbers of homes with sanitation deficiencies. The number of Indian homes within the communities must be consistent among the various methods cited above. If a field visit cannot be made, it is highly recommended that more than one method be used to determine sanitation deficiencies to increase the accuracy and establish greater credibility for the data.

The PDS is a listing of funded construction projects and is used as a management and reporting tool.

QA/QC Procedures:

Quality assurance for the Indian country water quality performance measure depends on the quality of the data in the STARS. The STARS data undergoes a series of quality control reviews at various levels within the IHS DSFC. The DSFC is required to annually report deficiencies in SDS to Congress in terms of total and feasible project costs for proposed sanitation projects and sanitation deficiency levels for existing homes.

Data Quality Reviews:

The SDS data initially undergoes a series of highly organized reviews by experienced tribal, IHS field, IHS district and IHS area personnel. The data are then sent to the DSFC headquarters office for review before final results are reported. The DSFC headquarters reviews the SDS data for each of the 12 IHS area offices. The data quality review consists of performing a number of established data queries and reports which check for errors and/or inconsistencies. In addition, the top 25 SDS projects and corresponding community deficiency profiles for each area are reviewed and scrutinized thoroughly. Detailed cost estimates are highly encouraged and are usually available for review.

Data Limitations:

The data are limited by the accuracy of reported data in STARS.

Error Estimate:

The IHS DSFC requires that higher-level projects (those with the possibility of funding prior to the next update) must be developed to allow for program implementation in an organized, effective, efficient manner. Those SDS projects (top 20%) must have cost estimates within 10% of the actual costs.

New/Improved Data or Systems:

The STARS is a web based application and therefore allows data to be continuously updated by personnel at various levels and modified as program requirements are identified.

References:

- Indian Health Service (IHS), Division of Sanitation Facilities (DSFC). Criteria for the Sanitation Facilities Construction Program, June 1999, Version 1.02, 3/13/2003. www.dsfc.ihs.gov/Documents/Criteria_March_2003.cfm
- Indian Health Service (IHS), Division of Sanitation Facilities (DSFC). Sanitation
- Deficiency System (SDS), Working Draft, "Guide for Reporting Sanitation Deficiencies for Indian Homes and Communities", May 2003. www.dsfc.ihs.gov/Documents/SDSWorkingDraft2003.pdf

FY 2005 PERFORMANCE MEASURES:

Prevent water pollution and protect aquatic systems so that overall aquatic system health of coastal waters nationally, and in each coastal region, is improved on the "good/fair/poor" scale of the National Coastal Condition Report.

Maintain water clarity and dissolved oxygen in coastal waters at the national levels reported in the 2002 National Coastal Condition Report based upon recent data reported in the 2005 National Coastal Condition Report.

Improve ratings reported on the national "good/fair/poor" scale of the National Coastal Condition Report for: coastal wetlands loss by at least 0.1 points; contamination of sediments in coastal waters by at least 0.1 points; benthic quality by at least 0.1 points; & eutrophic condition by at least 0.1 points.

Performance results related to these measures are presented in Goal 2, page 86.

Performance Database:

EMAP/NCA [Environmental Monitoring and Assessment Program/National Coastal Assessment] database (housed EPA/ORD/NHEERL/AED, Narragansett, RI)(Environmental Protection Agency/Office of Research and Development/National Health and Environmental Effects Research Laboratory/Gulf Ecology Division); pre-database information housed in ORD/NHEERL facility in Gulf Breeze, FL (Gulf Ecology Division) (pre-database refers

to a temporary storage site for data where they are examined for QA purposes, have appropriate metadata attached and undergo initial statistical analyses); data upon QA acceptance and metadata completion are transferred to EMAP/NCA database and are web available at www.epa.gov/emap/nca.

Data Source:

Probabilistic surveys of ecological condition completed throughout the Mid-Atlantic and Gulf of Mexico by EPA's Office of Research and Development (ORD) in 1991-1994, in southern Florida in 1995, in the Southeast in 1995-1997, in the Mid-Atlantic in 1997-1998, in each coastal state in 2000-2004 (except Alaska and Hawaii), in Alaska in 2002 and 2004, in Hawaii in 2002 and 2004, and in Puerto Rico in 2000 and 2004, and in other island territories (Guam, American Samoa and U.S. Virgin Islands) in 2004. Surveys collect condition information regarding water quality, sediment quality and biotic condition at 70-100 sites/region (e.g., mid-Atlantic) each year of collection prior to 1999 and at 35-150 sites in each state or territory/year (site number dependent upon state) after 1999. Additional sampling by the National Estuary Program (NEP) included all individual national estuaries; the total number of sites within NEP boundaries was 30 for the 2-year period 2000-2003.

These data are collected through a joint EPA-State cooperative agreement and the States follow a rigid sampling and collection protocol following intensive training by EPA personnel. Laboratory processing is completed at either a state laboratory or through a national EPA contract. Data collection follows a Quality Assurance Project Plan (QAPP) (either the National Coastal QAPP or a variant of it) and QA testing and auditing by EPA.

Methods, Assumptions and Suitability:

The surveys are conducted using a probabilistic survey design which allows extrapolation of results to the target population (in this case—all estuarine resources of the specific state.) The collection design maximizes the spatial spread between sites, located by specific latitude-longitude combinations. The survey utilizes an indexed sampling period (generally late summer) to increase the probability of encountering water quality, sediment quality and biotic condition problems, if they exist. Based on the QAPP and field collection manual, a site in a specific state is located by sampling vessel via Global Positioning System (GPS) and water quality is measured on board at multiple depths. Water samples are taken for chemistry; sediment samples are taken for chemistry, toxicity testing and benthic community assessment; and fish trawls are conducted to collect community fish data and provide selected fish (target species) for analysis of whole body and/or fillet contaminant concentrations. Samples are stored in accordance with field manual instructions and shipped to the processing laboratory. Laboratories follow QA plans and complete analyses and provide electronic information to the state or EPA. EPA and the state exchange data to ensure that each has a complete set. EPA analyzes the data to assess regional conditions, whereas the states analyze the data to assess conditions of state-specific waters. Results of analyses on a national and regional basis are reported as chapters in the National Coastal Condition Report (NCCR) series. The overall regional condition index is the simple mean of the five indicators' scores used in the Coastal Condition Report (in the NCCR2 a recalculation method was provided for direct comparison of the successive reports). An improvement for one of the indicators by a full category unit over the 8 year period will be necessary for the regional estimate to meet the performance measurement goal (+0.2 over an 8 year period).

Assumptions: (1) The underlying target population (estuarine resources of the United States) has been correctly identified; (2) GPS is successful; (3) QAPP and field collection manuals are followed; (4) all samples are successfully collected; (5) all analyses are completed in accordance with the QAPP; and (6) all combinations of data into indices are completed in a statistically rigorous manner.

Suitability: By design all data are suitable to be aggregated to the state and regional level to characterize water quality, sediment quality, and biotic condition. Samples represent "reasonable", site-specific point-in-time data (not primary intention of data use) and an excellent representation of the entire resource (extrapolation to entire resource supportable). The intended use of the data is the characterization of populations and subpopulations of estuarine resources through time. The data meet this expectation and the sampling, response, analysis and reporting designs have been peer reviewed successfully multiple times. The data are suitable for individual calendar year characterization of condition, comparison of condition across years, and assessment of long-term trends once sufficient data are collected (7-10 years). Data are suitable for use in National Coastal Condition calculations for the United States and its regions to provide performance measurement information. The first long-term trends analysis will appear in the 2006 NCCR representing trends between 1990-2004.

QA/QC Procedures:

The sampling collection and analysis of samples are controlled by a Quality Assurance Project Plan (QAPP) [EPA 2001] and the National Coastal Assessment Information Management Plan (IMP)[EPA 2001]. These plans are followed by all twenty-three coastal states and 5 island territories. Adherence to the plans are determined by field training (conducted by EPA ORD), field audits (conducted by EPA/ORD), round robin testing of chemistry laboratories (conducted by EPA/ORD), overall systems audits of state programs and national laboratory practices (conducted by EPA), sample splits (sent to reference laboratories), blind samples (using reference materials) and overall information systems audits (conducted by EPA/ORD). Batch sample processing for laboratory analyses requires the inclusion of QA samples in each batch. All states are subject to audits at least once every 2 years. All participants received training in year 2000 and retraining sessions are scheduled every 2 years.

Data Quality Reviews:

Data quality reviews have been completed in-house by EPA ORD at the regional and national level in 2000-2003 (National Coastal Assessment 2000-2003) and by the Office of Environmental Information (OEI) in 2003 (assessment completed in June, 2003 and written report not yet available; oral debriefing revealed no deficiencies).

No deficiencies were found in the program. A national laboratory used in the program (University of Connecticut) for nutrient chemistry, sediment chemistry and fish tissue chemistry is being evaluated by the Inspector General's Office for potential falsification of laboratory results in connection with other programs not related to NCA. The NCA has conducted its own audit assessment and only one incorrect use of a chemical digestion method for inorganic chemistry samples (metals) was found. This error was corrected and all samples "digested" incorrectly were reanalyzed at no cost.

Data Limitations:

Data limitations are few. Because the data are collected in a manner to permit calculation of uncertainty and designed to meet a specific Data Quality Objective (DQO) (<10% error in spatial calculation for each annual state estimate), the results at the regional level (appropriate for this performance measure) are within about 2–4% of true values dependent upon the specific sample type. Other limitations as follows: (a) Even though methodology errors are minimized by audits, in the first year of the NCA program (2000) some errors occurred resulting in loss of some data. These problems were corrected in 2001 and no problems have been observed since. (b) In some instances, (<5%) of sample results, QA investigation found irregularities regarding the precision of measurement (e.g., mortality toxicity testing of controls exceeded detection limit, etc.). In these cases, the data were "flagged" so that users are aware of the potential limitations. (c) Because of the sampling/ analysis design, the loss of data at a small scale (~ 10%) does not result in a significant increase in uncertainty in the estimate of condition. Wholesale data losses of multiple indicators throughout the U.S. coastal states and territories would be necessary to invalidate the performance measure. (d) The only major source of external variability is year-to-year climatic variation (drought vs. wet, major climatic event, etc.) and the only source of internal variation is modification of reporting indicators (e.g., new indices, not a change in data collected and analyzed). This internal reporting modification requires a re-analysis of earlier information to permit direct comparison. (e) There is generally a 2-3 year lag from the time of collection until reporting. Sample analysis generally takes 1 year and data analysis another. Add another year for report production and peer review. (f) Data collections are completed annually; The EPA/ORD data collection collaboration will continue through 2004. After 2004, ORD will assist OW, as requested, with expert advice, but will no longer support the program financially.

Error Estimate:

The estimate of condition (upon which the performance measure is determined) has an annual uncertainty rate of about 2-3% for national condition, about 5-7% for individual regional indicators (composite of all five states data into a regional estimate), and about 9-10% for individual state indicators. These condition estimates are determined from the survey data using cumulative distribution functions and the uncertainty estimates are calculated using the Horvitz-Thompson estimator.

New/Improved Data or Systems:

- Changes have occurred in the data underlying the performance measure based on scientific review and development. A change in some reporting indicators has occurred in order to more accurately represent the intended ecological process or function. For example, a new eutrophication index was determined for the 2000 data. In order to compare this new index to the 1991-1994 data, the earlier data results must be recomputed using the new technique. This recalculation is possible because the underlying data collection procedures have not changed.
- New national contract laboratories have been added every year based on competition. QA requirements are met by the new facilities and rigorous testing at these facilities is completed before sample analysis is initiated. QA adherence and cross-laboratory sample analysis has minimized data variability resulting from new laboratories entering the program.
- The only reason for the discontinuation of the National performance goal would be the elimination of the surveys after 2004 or any other year thereafter.

In order to continue to utilize the 2001 National Coastal Condition report as the baseline for this performance measure, the original scores reported in 2001 have been re-calculated in the 2004 report using the index modifications described above. These "new" results for the baseline (re-calculated scores) are reported in Appendix C of the 2005 report.

References:

- Environmental Monitoring and Assessment Database (1990-1998) and National Coastal Assessment Database (2000–2004) websites: www.epa.gov/emap.
- National Coastal Assessment. 2000-2003. Various internal memoranda regarding results of QA audits. (Available through John Macauley, National QA Coordinator NCA, USEPA, ORD/NHEERL/GED, 1 Sabine Island, Gulf Breeze, FL 32561)
- National Coastal Assessment. 2001. Quality Assurance Project Plan. EPA/620/R-01/002.(Available through John Macauley above)
- National Coastal Assessment. 2001. Information Management Plan. EPA/620/R-01/003 (Available through Stephen Hale, NCA IM Coordinator, ORD/NHEERL/AED, 27 Tarzwell Drive, Narragansett, RI)
- U.S. Environmental Protection Agency. 2001. National Coastal Condition Report. EPA-620/R-01/005.
- U.S. Environmental Protection Agency. 2004. National Coastal Condition Report II. In review Assigned Report Number EPA-620/R-03/002.

Goal 3, Objective 1

FY 2005 PERFORMANCE MEASURES:

Daily per capita generation.

Millions of tons municipal solid waste diverted.

Performance results related to these measures are presented in Goal 3, page 98.

Performance Database:

Data are provided by the Department of Commerce. EPA does not maintain a database for this information.

Data Source:

The baseline numbers for municipal solid waste (MSW) source reduction and recycling are developed using a materials flow methodology employing data largely from the Department of Commerce and described in the EPA report titled "Characterization of Municipal Solid Waste in the United States." The Department of Commerce collects materials production and consumption data from various industries.

Methods, Assumptions and Suitability:

Data on domestic production of materials and products are compiled using published data series. U.S. Department of Commerce sources are used, where available; but in several instances more detailed information on production of goods by end-use is available from trade associations. The goal is to obtain a consistent historical data series for each product and/or material. Data on average product lifetimes are used to adjust the data series. These estimates and calculations result in material-by-material and product-by-product estimates of MSW generation, recovery, and discards. To strategically support attainment of the 35% recycling goal, EPA has identified specific components of the MSW stream on which to focus: paper and paperboard, organics (yard and food waste), and packaging and containers. For these targeted efforts EPA will examine data on these waste components.

There are various assumptions factored into the analysis to develop estimates of MSW generation, recovery and discards. Example assumptions (from pages 141-142 of year 2000 "Characterization Report") include: Textiles used as rags are assumed to enter the waste stream the same year the textiles are discarded. Some products (e.g., newspapers and packaging) normally have short lifetimes and products are assumed to be discarded in the year they are produced.

QA/QC Procedures:

Quality assurance and quality control are provided by the Department of Commerce's internal procedures and systems. The report prepared by the Agency, "Characterization of Municipal Solid Waste in the United States," is reviewed by a number of experts for accuracy and soundness.

Data Quality Review:

The report, including the baseline numbers and annual rates of recycling and per capita municipal solid waste generation, is widely accepted among experts.

Data Limitations:

Data limitations stem from the fact that the baseline statistics and annual rates of recycling and per capita municipal solid waste generation are based on a series of models, assumptions, and extrapolations and, as such, are not an empirical accounting of municipal solid waste generated or recycled.

New/Improved Data or Systems:

Because the statistics on MSW generation and recycling are widely reported and accepted by experts, no new efforts to improve the data or the methodology have been identified or are necessary.

References:

Municipal Solid Waste in the United States: 2003 Facts and Figures, EPA, April 2005 (EPA530-F-05-003), www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm

FY 2005 PERFORMANCE MEASURE:

Percent increase of RCRA hazardous waste management facilities with permits or other approved controls in place.

Performance results related to these measures are presented in Goal 3, page 100.

Performance Database:

The Resource Conservation Recovery Act Information System (RCRAInfo) is the national database which supports EPA's RCRA program.

Data Source:

Data are entered by the states. Supporting documentation and reference materials are maintained in Regional and state files. EPA's Regional offices and authorized states enter data on a rolling basis.

Methods, Assumptions and Suitability:

The Resource Conservation Recovery Act Information System (RCRAInfo) is the national database which supports EPA's RCRA program. RCRAInfo contains information on entities (generically referred to as "handlers") engaged in hazardous waste generation and management activities regulated under the portion of RCRA that provides for regulation of hazardous waste. RCRAInfo has several different modules, including status of RCRA facilities in the RCRA permitting universe.

QA/QC Procedures:

States and EPA's Regional offices generate the data and manage data quality related to timeliness and accuracy. Within RCRAInfo, the application software contains structural controls that promote the correct entry of the high-priority national components. RCRAInfo documentation, which is available to all users on-line at www.epa.gov/rcrainfo/, provides guidance to facilitate the generation and interpretation of data. Training on use of RCRAInfo is provided on a regular basis, usually annually, depending on the nature of system changes and user needs. Even with the increasing emphasis on data quality, with roughly 10,000 units in the baseline (e.g., a facility can have more than one unit), we hear of data problems with some facilities every year, particularly with the older inactive facilities. When we hear of these issues, we work with the EPA Regional offices to see that they get resolved. It may be necessary to make a few adjustments to the permitting baseline as data issues are identified. Determination of whether or not the GPRA annual goal #1 (listed above) is met is based on the legal and operating status codes for each unit. Each year since 1999, in discussions with Regional offices and states, EPA has highlighted the need to keep the data that support the GPRA permitting goal current. RCRAInfo is the sole repository for this information and is a focal point for planning from the local to national level. Accomplishments for goal # 2 (listed above) are based on the permit expiration date code. This is a new code for the new goal and we have made changes to the database to make this code a high priority code. We have discussed the need for correct entry with the Regions. Since tracking this information is new, we anticipate that we will have to work out some reporting bugs, review the accuracy of tracking when it begins in October 1, 2005, and make adjustments if necessary.

Note:

Access to RCRAInfo is open only to EPA Headquarters, Regional, and authorized state personnel. It is not available to the general public because the system contains enforcement sensitive data. The general public is referred to EPA's Envirofacts Data Warehouse to obtain filtered information on RCRA-regulated hazardous waste sites.

Data Quality Review:

The 1995 GAO report *Hazardous Waste: Benefits of EPA's Information System Are Limited* (AIMD-95-167, August 22, 1995, www.gao.gov/archive/1995/ai95167.pdf) on EPA's Hazardous Waste Information System reviewed whether national RCRA information systems support EPA and the states in managing their hazardous waste programs. Recommendations coincide with ongoing internal efforts to improve the definitions of data collected, ensure that data collected provide critical information and minimize the burden on states. RCRAInfo, the current national database has evolved in part as a response to this report.

Data Limitations:

The authorized states have ownership of their data and EPA has to rely on them to make changes. The data that determine if a facility has met its permit requirements are prioritized in update efforts. Basic site identification data may become out-of-date because RCRA does not mandate annual or other periodic notification by the regulated entity when site name, ownership and contact information changes. Nevertheless, EPA tracks the facilities by their IDs and those should not change even during ownership changes. The baselines are composed of facilities that can have multiple units. These units may consolidate, split or undergo other activities that cause the number of units to change. We aim to have static baselines, but there may be occasions where we would need to make minor baseline modifications. The baseline of facilities that are currently tracked for goal #2 are "due for permit renewals," but we anticipate that there will be some facilities that cease to be "due for permit renewals" due to a change in facility status.

New/Improved Data or Systems:

EPA has successfully implemented new tools in RCRAInfo for managing environmental information to support Federal and state programs, particularly for permit renewals. RCRAInfo allows for tracking of information on the regulated universe of RCRA hazardous waste handlers, such as facility status, regulated activities, and compliance history. The system also captures detailed data on the generation of hazardous waste by large quantity generators and on waste management practices from treatment, storage, and disposal facilities. RCRAInfo is web accessible, providing a convenient user interface for Federal, state and local managers, encouraging development of in-house expertise for controlled cost, and using commercial off-the-shelf software to develop reports from database tables.

References:

RCRAInfo documentation and data (www.epa.gov/rcrainfo/). The 1995 GAO report *Hazardous Waste: Benefits of EPA's Information System Are Limited* (AIMD-95-167, August 22, 1995, www.gao.gov/archive/1995/ai95167.pdf).

FY 2005 PERFORMANCE MEASURES:

Number of confirmed releases at UST facilities nationally.

Percent increase of UST facilities that are in significant operational compliance with both release detection and release prevention (Spill, overfill, and corrosion protection requirements).

Performance results related to these measures are presented in Goal 3, page 100.

Performance Database:

The Office of Underground Storage Tanks (OUST) does not maintain a national database. States individually maintain records for reporting state program accomplishments.

Data Source:

Designated State agencies submit semi-annual progress reports to the EPA regional offices.

QA/QC Procedures:

EPA's regional offices verify and then forward the data in a word processing table to OUST. OUST staff examine the data and resolve any discrepancies with the regional offices. The data are displayed in a word processing table on a region-by-region basis, which is a way regional staff can check their data.

Data Limitations:

Percentages reported are sometimes based on estimates and extrapolations from sample data. Data quality depends on the accuracy and completeness of state records.

References:

FY 2005 Semi-Annual Mid-Year Activity Report, June 2, 2005 (updated semi-annually). www.epa.gov/OUST/cat/ca_05_12.pdf.

Goal 3, Objective 2

FY 2005 PERFORMANCE MEASURES:

Number of inspections and exercises conducted at oil storage facilities required to have Facility Response Plans.

Oil spills responded to or monitored by EPA.

Performance results related to these measures are presented in Goal 3, page 106.

Performance Database:

The Office of Emergency Management has recently gone through a reorganization bringing together the chemical and oil emergency prevention, preparedness, and response programs of the Agency. Additionally, the Oil Program is currently undergoing a PART review, therefore, a new reporting system is under development to take into account the recent reorganization as well as the resulting annual and long-term measures develop through the PART review. This system will store oil spill prevention, emergency preparedness and response information (e.g., compliance and oil spill information).

Methods, Assumptions and Suitability:

Pending new database.

References:

For additional information on the Oil program, see www.epa.gov/oilspill

FY 2005 PERFORMANCE MEASURE:

Percentage of emergency response and homeland security readiness improvement.

Performance results related to these measures are presented in Goal 3, page 106.

Performance Database:

No specific database has been developed. Data from evaluations from each of the 10 Regions are tabulated and stored using standard software (WordPerfect, spreadsheets, etc.).

Data Source:

Data are collected through detailed surveys of all Regional programs, and interviews with personnel and managers in each program office. The score represents a composite based upon data from each unique Regional and headquarters organization. Annual increments represent annual improvements. The survey instrument was developed based upon Core Emergency Response (ER) elements, and has been approved by EPA Headquarters and Regional managers. Core ER elements cover all aspects of the Core ER program, including Regional Response Centers, transportation, coordination with backup Regions, health and safety, delegation and warrant authorities, response readiness, response equipment, identification clothing, training and exercises, and outreach.

While EPA is currently prepared to respond to chemical, biological, and radiological incidents, improvement in the emergency response and homeland security readiness measure will demonstrate an increased ability to respond quickly and effectively to national-scale events. The FY 2007 Core ER target is to improve emergency response and homeland security readiness by 10% from the FY 2006 baseline performance.

Methods, Assumptions and Suitability:

The Core ER elements were developed over the last several years by the EPA Removal Program to identify and clarify what is needed to ensure an excellent emergency response program. The elements, definitions, and rationales were developed by staff and managers and have been presented to the Administrator and other high level Agency managers. Based on the Core ER standards, evaluation forms and criteria were established for EPA's Regional programs, the Environmental Response Team (ERT), and Headquarters. These evaluation criteria identify what data need to be collected, and how that data translate into an appropriate score for each Core ER element. The elements and evaluation criteria will be reviewed each year for relevance to ensure that the programs have the highest standards of excellence and that the measurement clearly reflects the level of readiness. The data are collected from each Regional office, ERT, and Headquarters using a systematic, objective process. Each evaluation team consists of managers and staff, from Headquarters and from another EPA Regional office, with some portion of the team involved in all reviews for consistency and some portion varying to ensure independence and objectivity. For instance, a team evaluating Region A might include

some or all of the following: a staff person from Headquarters who is participating in all reviews, a staff person from Headquarters who is very familiar with Region A activities, a manager from Headquarters, and a staff person and/or manager from Region B. One staff or group will be responsible for gathering and analyzing all the data to determine the overall score for each Regional office, ERT, and Headquarters, and for determining an overall National score.

QA/QC Procedures:

See "Methods, Assumptions and Suitability".

Data Quality Review:

The evaluation team will review the data (see Methods, Assumptions and Suitability) during the data collection and analysis process. Additional data review will be conducted after the data has been analyzed to ensure that the scores are consistent with the data and program information. There currently is no specific database that has been developed to collect, store, and manage the data.

Data Limitations:

One key limitation of the data is the lack of a dedicated database system to collect and manage the data. Standard software packages (word processing, spreadsheets) are used to develop the evaluation criteria, collect the data, and develop the accompanying readiness scores. There is also the possibility of subjective interpretation of data.

Error Estimate:

It is likely that the error estimate for this measure will be small for the following reasons: the standards and evaluation criteria have been developed and reviewed extensively by Headquarters and EPA's Regional managers and staff; the data will be collected by a combination of managers and staff to provide consistency across all reviews plus an important element of objectivity in each review; the scores will be developed by a team looking across all ten Regions, ERT, and Headquarters; and only twelve sets of data will be collected, allowing for easier cross-checking and ensuring better consistency of data analysis and identification of data quality gaps.

New/Improved Data or Systems:

There are no current plans to develop a dedicated system to manage the data.

References:

FY 2004/2005 Superfund Program Implementation Manual (SPIM), www.epa.gov/superfund/.

FY 2005 PERFORMANCE MEASURES:

- Number of final Superfund site assessment decisions.
- Number of Superfund hazardous waste sites with human exposures controlled.
- Number of Superfund hazardous waste sites with groundwater migration controlled.
- Number of final remedies (cleanup targets) selected at Superfund sites.
- Number of Superfund construction completions.
- Percentage of Superfund spending obligated site-specifically.
- Voluntary removal actions overseen by EPA and completed annually.
- Superfund-lead removal actions completed annually.
- Superfund-lead removal actions completed annually per million dollars.

Performance results related to these measures are presented in Goal 3, page 102.

Performance Database:

The Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS) is the database used by the Agency to track, store, and report Superfund site information.

Data Source:

CERCLIS is an automated EPA system; headquarters and EPA's Regional offices enter data into CERCLIS on a rolling basis.

Methods, Assumptions and Suitability:

Each performance measure is a specific variable within CERCLIS.

QA/QC Procedures:

To ensure data accuracy and control, the following administrative controls are in place: 1) Superfund Implementation Manual (SPIM), the program management manual that details what data must be reported; 2) Report Specifications, which are published for each report detailing how reported data are calculated; 3) Coding Guide, which contains technical instructions to such data users as Regional Information Management Coordinators (IMCs), program personnel, report owners, and data input personnel; 4) Quality Assurance (QA) Unit Testing, an extensive QA check against report specifications; 5) Regional CERCLIS Data Entry Internal Control Plan, which includes: (a) regional policies and procedures for entering data into CERCLIS; (b) a review process to ensure that all Superfund accomplishments are supported by source documentation; (c) delegation of authorities for approval of data input into CERCLIS; and (d) procedures to ensure that reported accomplishments meet accomplishment definitions; and (6) a historical lockout feature has been added to CERCLIS so that changes in past fiscal year data can be changed only by approved and designated personnel and are logged to a change-log report. Specific direction for these controls is contained in the Superfund Program Implementation Manual (SPIM) Fiscal Year 2004/2005 (www.epa.gov/superfund/action/process/spim04.htm) and the Fiscal

Year 2006/2007 SPIM (www.epa.gov/superfund/action/process/spim06.htm).

CERCLIS operation and further development is taking place under the following administrative control quality assurance procedures: 1) Office of Environmental Information Interim Agency Life Cycle Management Policy Agency Directive 2100.4 (cfint1.rtpnc.epa.gov/ntsdweb/); 2) the Office of Superfund Remediation and Technology Innovation Quality Management Plan (www.epa.gov/swerffrr/pdf/oswer_qmp.pdf) 3) Agency platform, software and hardware standards (basin.rtpnc.epa.gov/ntsd/itroadmap.nsf); 4) Quality Assurance Requirements in all contract vehicles under which CERCLIS is being developed and maintained (www.epa.gov/quality/informationguidelines); and 5) Agency security procedures (basin.rtpnc.epa.gov/ntsd/ITRoadMap.nsf/Security?OpenView). In addition, specific controls are in place for system design, data conversion and data capture, and CERCLIS outputs.

Data Quality Reviews:

Two audits, one by the Office Inspector General (OIG) and the other by Government Accountability Office (GAO), were conducted to assess the validity of the data in CERCLIS. The OIG audit report, *Superfund Construction Completion Reporting* (No. E1SGF7_05_0102_ 8100030), dated December 30, 1997, was prepared to verify the accuracy of the information that the Agency was providing to Congress and the public. The OIG report concluded that the Agency "has good management controls to ensure accuracy of the information that is reported," and "Congress and the public can rely upon the information EPA provides regarding construction completions." Further information on this report are available at www.epa.gov/oigearth/. The GAO's report, *Superfund: Information on the Status of Sites* (GAO/RCED-98-241), dated August 28, 1998, was prepared to verify the accuracy of the information in CERCLIS on sites' cleanup progress. The report estimates that the cleanup status of National Priority List (NPL) sites reported by CERCLIS as of September 30, 1997, is accurate for 95 percent of the sites. Additional information on the *Status of Sites* may be obtained at www.gao.gov/archive/1998/rc98241.pdf. Another OIG audit, *Information Technology—Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality* (Report No. 2002-P-00016), dated September 30, 2002, evaluated the accuracy, completeness, timeliness, and consistency of the data entered into CERCLIS. The report provided 11 recommendations to improve controls for CERCLIS data quality. EPA concurs with the recommendations contained in the audit, and many of the identified problems have been corrected or long-term actions that would address these recommendations continue to be underway. Additional information about this report is available at www.epa.gov/oigearth.

The IG reviews annually the end-of-year Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) data, in an informal process, to verify the data supporting the performance measures. Typically, there are no published results.

The Quality Management Plan (QMP) for the Office of Solid Waste and Emergency Response (OSWER) was signed in August 2003 (www.epa.gov/swerffrr/pdf/oswer_qmp.pdf).

Data Limitations:

Weaknesses were identified in the OIG audit, *Information Technology—Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality* (Report No. 2002-P-00016), dated September 30, 2002. The Agency disagrees with the study design and report conclusions; however, the report provided 11 recommendations with which EPA concurs. Many of the identified problems have been corrected or long-term actions that would address these recommendations continue to be underway, e.g., 1) FY 02/03 SPIM Chapter 2 update was made to better define the Headquarters' and Regional roles and responsibilities for maintaining planning and accomplishment data in CERCLIS; 2) FY 04/05 SPIM Appendix A, Section A.A.5 'Site Status Indicators' added language to clarify the use of the non-NPL status code of "SX"; 3) FY 04/05 SPIM Appendix A, Section A.A.6 'Data Quality' added a section on data quality which includes a list of relevant reports; 4) FY 04/05 SPIM Appendix E, Section E.A.5 "Data Owners/Sponsorship' was revised to reflect what data quality checks (focus data studies) will be done by designated Regional and headquarters staff; 5) A data quality objectives supplement for GPRA measures was added in Change 6 to this SPIM. For changes regarding this OIG audit, see the Change Log for this SPIM at www.epa.gov/superfund/) Draft guidance from OCA (Other Cleanup Activity) subgroup, which outlines the conditions under which sites are taken back from states when states have the lead but are not performing; and 7) Pre-CERCLIS Screening: A Data Entry Guide, which provides guidance to the regions for preventing entry of duplicate sites in CERCLIS. The development and implementation of a quality assurance process for CERCLIS data has begun. This process includes delineating quality assurance responsibilities in the program office and periodically selecting random samples of CERCLIS data points to check against source documents in site files.

Error Estimate:

The GAO's report, *Superfund: Information on the Status of Sites* (GAO/RECD-98-241), dated August 28, 1998, estimates that the cleanup status of National Priority List sites reported by CERCLIS is accurate for 95 percent of the sites. The OIG report, *Information Technology—Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality* (Report No. 2002-P-00016), dated September 30, 2002, states that over 40 percent of CERCLIS data on site actions reviewed was inaccurate or not adequately supported. Although the 11 recommendations were helpful and will improve controls over CERCLIS data, the Agency disagrees and strongly objects to the study design and report conclusions, stating they do not focus on the program's data quality hierarchy and the importance it places on NPL sites.

New/Improved Data or Systems:

A CERCLIS modernization effort, initiated in 2002, has been completed. As a result of the modernization effort, CERCLIS now has standards for data quality. Each EPA Region's CERCLIS Data Entry Control Plan, which identifies policies and procedures for data entry, is reviewed annually. Data quality audit fields have been added to CERCLIS.

EPA Headquarters has begun to create and share with the Regions data quality audit reports. These reports document data quality for timeliness, completeness, and accuracy as determined by the Superfund data sponsors to encourage and ensure high data quality. The modernization effort has increased the availability of CERCLIS data via Superfund eFacts, a Superfund data mart which serves program managers in Headquarters and the Regions. In FY 2007, the program will continue its effort to improve its management of the program through the increased availability of timely and accurate technical information to Superfund's managers. In 2007, the Agency will work to increase utilization of CERCLIS data by incorporating additional remedy selection, risk, removal response, and community involvement data into CERCLIS.

The Business Process Reevaluation task in the modernization project has provided CERCLIS managers with a first step in an implementation evaluation. The document, which resulted from the evaluation, is being used as a valuable resource for scoping the future redesign of CERCLIS as well as the realignment of the database that will remove unnecessary data and add the new data fields that are necessary to manage the Superfund program today. The redesign is mandated to bring CERCLIS into the Agency's Enterprise Architecture. As part of OSRTI's effort to bring CERCLIS into the Agency's Enterprise Architecture all Regional databases have been moved to the National Computing Center in RTP. This is the first step in folding the Headquarters and Regional databases into one database. This move of the databases to RTP is being done without changing the application, by using a commercial off the shelf (COTS) software program to enable the Regional data entry staff to input data over the Agency's Wide Area Network. The initial step of moving the databases to RTP and moving all users to the COTS software has been completed. The move to a single database will be completed during FY 2006 and implemented in FY 2007. The Superfund Document Management System (SDMS) will be linked to CERCLIS. This linkage will enable users to easily transition between the programmatic accomplishments reporting to the actual document that defines and describes the accomplishment reported in CERCLIS. The effort to link SDMS and CERCLIS and to consolidate the systems will lead to common reporting (same events and data) in CERCLIS and SDMS. This will be done by electronically extracting data from the documents in SDMS to fill the data fields in CERCLIS—eliminating the manual data entry/human error impacts.

References:

OIG audit *Superfund Construction Completion Reporting,* (No. E1SGF7_05_0102_ 8100030) and *Information Technology—Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Data Quality*, (No. 2002-P-00016, www.epa.gov/oigearth); and the GAO report, *Superfund Information on the Status of Sites* (GAO/RCED-98-241, www.gao.gov/archive/1998/rc98241.pdf). The Superfund Program Implementation Manuals for the fiscal years 1987 to the current manual (www.epa.gov/superfund/action/guidance/index.htm). The Quality Management Plan (QMP) for the Office of Solid Waste and Emergency Response (August 2003, www.epa.gov/swerffrr/pdf/oswer_qmp.pdf). The Office of Superfund Remediation and Technology Innovation Quality Management Plan (www.epa.gov/swerffrr/pdf/oswer_qmp.pdf). EPA platform, software and hardware standards (basin.rtpnc.epa.gov/ntsd/itroadmap.nsf). Quality Assurance Requirements in all contract vehicles under which CERCLIS are being developed and maintained (www.epa.gov/quality/informationguidelines). EPA security procedures (basin.rtpnc.epa.gov/ntsd/ITRoadMap.nsf/Security?OpenView).

FY 2005 PERFORMANCE MEASURES:

High priority RCRA facilities with human exposures to toxins controlled.

High priority RCRA facilities with toxic releases to groundwater controlled.

Performance results related to these measures are presented in Goal 3, page 101.

Performance Database:

The Resource Conservation Recovery Act Information System (RCRAInfo) is the national database that supports EPA's RCRA program.

Data Source:

The states and Regions enter data. A "High", "Medium", or "Low" entry is made in the database with respect to final-assessment decision. A "yes" or "no" entry is made in the database with respect to meeting the human exposures to toxins controlled and releases to groundwater controlled indicators. An entry will be made in the database to indicate the date when a remedy is selected and the complete construction of a remedy is made. Supporting documentation and reference materials are maintained in the Regional and state files. EPA's Regional offices and authorized states enter data on a continual basis.

Methods, Assumptions and Suitability:

RCRAInfo has several different modules, including a Corrective Action Module that tracks the status of facilities that require, or may require, corrective actions. RCRAInfo contains information on entities (generically referred to as "handlers") engaged in hazardous waste (HW) generation and management activities regulated under the portion of RCRA that provides for regulation of hazardous waste. All five measures are used to summarize and report on the facility-wide environmental conditions at the RCRA Corrective Action Program's highest priority facilities. The environmental indicators are used to track the RCRA program's progress in getting highest priority contaminated facilities under control. Known and suspected facility-wide condi-

tions are evaluated using a series of simple questions and flow-chart logic to arrive at a reasonable, defensible determination. These questions were issued as a memorandum titled: *Interim Final Guidance for RCRA Corrective Action Environmental Indicators,* Office of Solid Waste, February 5, 1999). Lead regulators for the facility (authorized state or EPA) make the environmental indicator determination; however, facilities or their consultants may assist EPA in the evaluation by providing information on the current environmental conditions. Remedies selected and complete constructions of remedies are used to track the RCRA program's progress in getting highest priority contaminated facilities moving towards final cleanup. The lead regulators for the facility make the remedies selection and construction completion of remedies determinations.

QA/QC Procedures:

States and Regions generate the data and manage data quality related to timeliness and accuracy (i.e., the environmental conditions and determinations are correctly reflected by the data). Within RCRAInfo, the application software enforces structural controls that ensure that high-priority national components of the data are properly entered. RCRAInfo documentation, which is available to all users on-line, provides guidance to facilitate the generation and interpretation of data. Training on use of RCRAInfo is provided on a regular basis, usually annually, depending on the nature of systems changes and user needs.

Note:

Access to RCRAInfo is open only to EPA Headquarters, Regional, and authorized state personnel. It is not available to the general public because the system contains enforcement sensitive data. The general public is referred to EPA's Envirofacts Data Warehouse to obtain filtered information on RCRA-regulated hazardous waste facilities.

Data Quality Review:

GAO's 1995 Report on EPAs Hazardous Waste Information System (http://www.access.gpo.gov/su_docs/fdlp/pubs/study/studyhtm.html) reviewed whether national RCRA information systems support EPA and the states in managing their hazardous waste programs. Recommendations coincide with ongoing internal efforts (WIN/Informed) to improve the definitions of data collected, ensure that data collected provide critical information and minimize the burden on states. EPA's Quality Staff of Office of Environmental Information conducted a quality systems audit in December 2003. The audit found the corrective action program satisfactory.

Data Limitations:

No data limitations have been identified. As discussed above, the performance measure determinations are made by the authorized states and EPA Regions based on a series of standard questions and entered directly into RCRAInfo. EPA has provided guidance and training to states and Regions to help ensure consistency in those determinations. High priority facilities are monitored on a facility-by-facility basis and the QA/QC procedures identified above are in place to help ensure data validity.

New/Improved Data or Systems:

EPA has successfully implemented new tools for managing environmental information to support federal and state programs, replacing the old data systems (the Resource Conservation and Recovery Information System and the Biennial Reporting System) with RCRAInfo. RCRAInfo allows for tracking of information on the regulated universe of RCRA hazardous waste handlers, such as facility status, regulated activities, and compliance history. The system also captures detailed data on the generation of hazardous waste from large quantity generators and on waste management practices by treatment, storage, and disposal facilities. RCRAInfo is web-accessible, providing a convenient user interface for federal, state and local managers, encouraging development of in-house expertise for controlled cost, and using commercial off-the-shelf software to develop reports from database tables.

References:

GAO's 1995 Report on EPA's Hazardous Waste Information System reviewed whether national RCRA information systems support EPA and the states in managing their hazardous waste programs. This historical document is available on the Government Printing Office Website (www.access.gpo.gov/su_docs/fdlp/pubs/study/studyhtm.html).

FY 2005 PERFORMANCE MEASURES:

Reduce the number of LUST cleanups that exceed state risk-based standards for human exposure and groundwater migration. (Tracked as: Number of leaking underground storage tank cleanups completed.)

Reduce the number of LUST cleanups that exceed risk-based standards for human exposure and groundwater migration in Indian Country. (Tracked as: Number of leaking underground storage tank cleanups completed in Indian Country.)

Performance results related to these measures are presented in Goal 3, page 101.

Performance Database:

The Office of Underground Storage Tanks (OUST) does not maintain a national database. States individually maintain records for reporting state program accomplishments.

Data Source:

Designated State agencies submit semi-annual progress reports to the EPA regional offices. The data for the comparison of leaking underground storage tank cleanups will be developed in FY 2005 for a planned reporting date of FY 2006.

QA/QC Procedures:

EPA's regional offices verify and then forward the data in a word processing table

to OUST. OUST staff examine the data and resolve any discrepancies with the regional offices. The data are displayed in a word processing table on a region-by-region basis, which is a way regional staff can check their data.

Data Limitations:

Percentages reported are sometimes based on estimates and extrapolations from sample data. Data quality depends on the accuracy and completeness of state records.

References:

FY 2005 Semi-Annual Mid-Year Activity Report, June 2, 2005 (updated semi-annually). www.epa.gov/OUST/cat/ca_05_12.pdf

FY 2005 PERFORMANCE MEASURES:

Refer to DOJ, settle, or writeoff 100% of Statute of Limitations (SOLs) cases for Superfund sites with total unaddressed past costs equal to or greater than $200,000 and report value of costs recovered.

Percentage of Superfund sites at which settlement or enforcement action is taken before the start of a remedial action.

Performance results related to these measures are presented in Goal 3, page 105.

Performance Database:

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database contains information on hazardous waste sites, potentially hazardous waste sites and remedial activities across the nation. The database includes sites that are on the National Priorities List (NPL) or being considered for the NPL.

Data Source:

Automated EPA system; Headquarters and EPA's Regional Offices enter data into CERCLIS.

Methods, Assumptions and Suitability:

There are no analytical or statistical methods used to collect the information. The performance data collected on a fiscal year basis only. Enforcement reports are run at the end of the fiscal year, and the data that support this measure are extracted from the report.

QA/QC Procedures:

Office of Site Remediation Enforcement (OSRE) Quality Management Plan, approved April 11, 2001. To ensure data accuracy and control, the following administrative controls are in place: 1) Superfund/Oil Implementation Manual (SPIM), a program management manual that details what data must be reported; 2) Report specifications, which are published for each report detailing how reported data are calculated; 3) Coding Guide, which contains technical instructions to such data users as regional Information Management Coordinators (IMCs), program personnel, report owners, and data input personnel; 4) Quality Assurance (QA) Unit Testing, an extensive QA check against report specifications; 5) QA Third Party Testing, an extensive test made by an independent QA tester to ensure that the report produces data in conformance with the report specifications; 6) Regional CERCLIS Data Entry Internal Control Plan, which includes: a) regional policies and procedures for entering data into CERCLIS, b) a review process to ensure that all Superfund accomplishments are supported by source documentation, c) delegation of authorities for approval of data input into CERCLIS, and, d) procedures to ensure that reported accomplishments meet accomplishment definitions; and 7) a historical lockout feature that has been added to CERCLIS so that changes in past fiscal year data can be changed only by approved and designated personnel and are logged to a change-log report.

Data Quality Review:

The IG annually reviews the end-of-year CERCLIS data, in an informal process, to verify the data supporting the performance measure. Typically, there are no published results.

References:

Office of Site Remediation Enforcement (OSRE) Quality Management Plan, approved April 11, 2001.

Goal 3, Objective 3

FY 2005 PERFORMANCE MEASURE:

SITE demonstrations completed.

Performance results related to these measures are presented in Goal 3, page 108.

Performance Database:

Program output; no internal tracking system

Goal 4, Objective 1

FY 2005 PERFORMANCE MEASURES:

Number of registrations of reduced risk pesticides registered (Register safer chemicals and biopesticides) (cumulative).

Number of new (active ingredients) conventional pesticides registered (New Chemicals)(Cumulative).

Number of conventional new uses registered (New Uses) (Cumulative).

Maintain timeliness of Section 18 Emergency Exemption Decisions.

Reduce registration decision times for new conventional chemicals.

Reduce registration decision times for reduced risk chemicals.

Performance results related to these measures are presented in Goal 4, pages 121, 129.

Performance Database:

The OPPIN (Office of Pesticide Programs Information Network) consolidates various pesticides program databases. It is maintained by the EPA and tracks regulatory data submissions and studies, organized by scientific discipline, which are submitted by the registrant in support of a pesticide's registration. In addition to tracking decisions in OPPIN, manual counts are also maintained by the office on the registrations of reduced risk pesticides. Results for reduced risk pesticides, new active conventional ingredients, and new uses have been reported since 1996. The results are calculated on a fiscal year (FY) basis. For antimicrobial new uses, results have been reported since FY 2004 on a FY basis. Both S18 timeliness and reduced risk decision times are being reported on a FY basis for the first time in FY 2005.

Data Source:

Pesticide program reviewers update the status of the submissions and studies as they are received and as work is completed by the reviewers. The status indicates whether the application is ready for review, the application is in the process of review, or the review has been completed.

Methods, Assumptions and Suitability:

The measures are program outputs which when finalized, represent the program's statutory requirements to ensure that pesticides entering the marketplace are safe for human health and the environment, and when used in accordance with the packaging label present a reasonable certainty of no harm. While program outputs are not the best measures of risk reduction, registration outputs do provide a means for reducing risk by ensuring that pesticides entering the marketplace meet the latest health standards, thus when used according to the label are safe.

QA/QC Procedures:

A reduced risk pesticide must meet the criteria set forth in Pesticide Registration Notice 97-3, September 4, 1997. Reduced risk pesticides include those which reduce the risks to human health; reduce the risks to non-target organisms; reduce the potential for contamination of groundwater, surface water or other valued environmental resources; and/or broaden the adoption of integrated pest management strategies, or make such strategies more available or more effective. In addition, biopesticides are generally considered safer (and thus reduced risk). All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review. The office adheres to its Quality Management Plan (May 2000) in ensuring data quality and that procedures are properly applied.

Data Quality Review:

These are program outputs. EPA staff and management review the program outputs in accordance with established policy for the registration of reduced-risk pesticides as set forth in Pesticide Regulation Notice 97-3, September 4, 1997.

Data Limitations:

None. All required data must be submitted for the risk assessments before the pesticide is registered. If data are not submitted, the pesticide is not registered. As stated above, a reduced risk pesticide must meet the criteria set forth in PRN 97-3 and all registrations must meet FQPA safety requirements. If a pesticide does not meet these criteria, it is not registered. If an application for a reduced risk pesticide does not meet the reduced risk criteria, it is reviewed as a conventional active ingredient.

New/Improved Data or Systems:

The OPPIN (Office of Pesticide Programs Information Network), which consolidates various pesticides program databases, will reduce the processing time for registration actions.

References:

FIFRA Sec 3(c)(5); FFDCA Sec 408(a)(2); EPA Pesticide Registration Notice 97-3, September 4, 1997; Food Quality Protection Act (FQPA) 1996; OPP Quality Management Plan, May 2000); Endangered Species Act.

FY 2005 PERFORMANCE MEASURES:

Number of Reregistration Eligibility Decisions (REDs) issued (cumulative).
Number of Product Reregistration decisions issued.
Number of inert ingredients tolerances reassessed.
Reduce decision times for REDs.
Tolerance reassessments for top 20 foods eaten by children.
Tolerance Reassessment.

Performance results related to these measures are presented in Goal 4, page 121.

Performance Database:

The OPPIN (Office of Pesticide Programs Information Network) consolidates various EPA program databases. It is maintained by the EPA and tracks regulatory data submissions and studies, organized by scientific discipline, which are submitted by the registrant in support of a pesticide's reregistration. In addition to tracking decisions in OPPIN, manual counts are also maintained by the office on the reregistrations decisions. Decisions are logged in as the action is completed, both for final decisions and interim decisions. REDs and product reregistration decisions have been reported on a FY basis since FY 1996. Reduction in decision times for REDs will be reported on an FY basis in FY 2005.

Data Source:

EPA's Pesticides Program staff and managers.

Methods, Assumptions and Suitability:

The measures are program outputs which represent the program's statutory requirements to ensure that pesticides entering the marketplace are safe for human health and the environment and when used in accordance with the packaging label present a reasonable certainty of no harm. While program outputs are not the best measures of risk reduction, they do provide a means for reducing risk in that the program's safety review prevents dangerous pesticides from entering the marketplace.

QA/QC Procedures:

All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review. The office adheres to the procedures for quality management of data as outlined in its QMP approved May 2000.

Data Quality Review:

Management reviews the program counts and signs off on the decision document.

New/Improved Data or Systems:

The OPPIN, which consolidates various pesticides program databases, will contribute to reducing the processing time for reregistration actions.

References:

EPA Website http://www.epa.gov/pesticides EPA Annual Report 2002 EPA Number 735-R-03-001; 2003 Annual Performance Plan OPP Quality Management Plan, May 2000; Endangered Species Act.

FY 2005 PERFORMANCE MEASURES:

Annual number of large transformers safely disposed.
Annual number of large capacitors safely disposed.

Performance results related to these measures are presented in Goal 4, page 123.

Performance Database:

PCB Annual Report Database. The results are calculated on a calendar year (CY) basis. Two-year data lag and results for CY 05 will not be available until 2007.

Data Source:

Annual Reports from commercial storers and disposers of PCB Waste.

Methods, Assumptions, and Suitability:

Data provide a baseline for the amount of safe disposal of PCB waste annually. By ensuring safe disposal of PCBs in equipment such as transformers and capacitors coming out of service, and contaminated media such as soil, and structures from remediation activities, the Agency is reducing the exposure risk of PCBs that are either already in the environment or may be released to the environment through spills or leaks.

QA/QC Procedures:

The Agency reviews, transcribes, and assembles data into the Annual Report Database.

Data Quality Reviews:

The Agency contacts data reporters, when needed, for clarification of data submitted.

Data Limitations:

Data limitations include missing submissions from commercial storers and disposers, and inaccurate submissions. PCB-Contaminated Transformers, of PCB concentrations 50 to 499 parts per million (ppm), and those that are 500 ppm PCBs or greater are not distinguished in the data. Similarly, large and small capacitors of PCB waste may not be differentiated. Data are collected for the previous calendar year on July 1 of the next year creating a lag of approximately 1 year. Despite these limitations, the data do provide the only estimate of the amount of PCB waste disposed annually.

References:

U.S EPA, Office of Pollution Prevention and Toxics, National Program Chemicals Program, PCB Annual Report for Storage and Disposal of PCB Waste.

FY 2005 PERFORMANCE MEASURE:

Screening assays completed.

Performance results related to these measures are presented in Goal 4, page 126.

Performance Database:

Program output; Data are generated to support all stages of the validation of endocrine test methods through contracts, grants and interagency agreements, and the cooperative support of the Organization of Economic Cooperation and Development (OECD), and EPA's Office of Research and Development (ORD). The scope of the effort includes the conduct of laboratory studies and associated analyses to validate the assays proposed for the Endocrine Disruptor Screening Program (EDSP). This measure, however, tracks only the end product. EPA's contractor maintains a Data Coordination Center which manages information/data generated under the EDSP.

FY 2005 PERFORMANCE MEASURE:

Number of children aged 1-5 years with elevated blood lead levels (> or = 10 ug/dL).

Performance results related to these measures are presented in Goal 4, page 123.

Performance Database:

Data from the Centers for Disease Control and Prevention's (CDC) National Health and Nutrition Examination Survey (NHANES) is recognized as the primary database in the United States for national blood lead statistics. NHANES is a probability sample of the non-institutionalized population of the United States. Data are collected on a calendar year basis, and is currently released to the public in 2 year sets. The most current release was the data set for 2001-2002, released in early 2005. Blood lead levels are measured for participants who are at least 1 year old. The survey collects information on the age of the participant at the time of the survey.

Data Source:

The National Health and Nutrition Examination Survey is a survey designed to assess the health and nutritional status of adults and children in the U.S. The survey program began in the early 1960s as a periodic study, and continues as an annual survey. The survey examines a nationally representative sample of approximately 5,000 men, women, and children each year located across the U.S. CDC's National Center for Health Statistics (NCHS) is responsible for the conduct of the survey and the release of the data to the public. NCHS and other CDC centers publish results from the survey, generally in CDC's Morbidity and Mortality Weekly Report (MMWR), but also in scientific journals. In recent years, CDC has published a National Exposure report based on the data from the NHANES. The most current National Exposure report was released on July 21, 2005, and is available at the web site www.cdc.gov/exposurereport/

Methods, Assumptions, and Suitability:

Detailed interview questions cover areas related to demographic, socio-economic, dietary, and health-related questions. The survey also includes an extensive medical and dental examination of participants, physiological measurements, and laboratory tests. Specific laboratory measurements of environmental interest include: metals (e.g. lead, cadmium, and mercury), VOCs, phthalates, organophosphates (OPs), pesticides and their metabolites, dioxins/furans, and polyaromatic hydrocarbons (PAHs). NHANES is unique in that it links laboratory-derived biological markers (e.g. blood, urine etc.) to questionnaire responses and results of physical exams. For this performance measure, NHANES has been recognized as the definitive source. Estimates of the number of children 1-5 years with an elevated blood lead level based on NHANES have been published by CDC, most recently in May, 2005. (See www.cdc.gov/mmwr/preview/mmwrhtml/mm5420a5.htm). Analytical guidelines issued by NCHS generally recommend analyzing the data in 4 year periods. Analyses of data for 2 year periods are capable of reasonably valid inferences in certain cases. Historically, CDC has published estimates for this measure based on 4 year periods, with an exception for 1999-2000.

QA/QC Procedures:

Quality assurance plans are available from the CDC as outlined on the web site www.cdc.gov/nchs/nhanes.htm under the NHANES section. The analytical guidelines are available at the web site www.cdc.gov/nchs/data/nhanes/nhanes_general_guidelines_june_04.pdf).

Data Quality Reviews:

CDC follows standardized survey instrument procedures to collect data to promote data quality, and data are subjected to rigorous QA/QC review. CDC/NCHS has an elaborate data quality checking procedure outlined on the web site www.cdc.gov/nchs/nhanes.htm under the NHANES section.

Data Limitations:

NHANES is a voluntary survey and selected persons may refuse to participate. In addition, the NHANES survey uses two steps, a questionnaire and a physical exam. There are sometimes different numbers of subjects in the interview and examinations because some participants only complete one step of the survey. Participants may answer the questionnaire but not provide the more invasive blood sample. Special weighting techniques are used to adjust for non-response. Seasonal changes in blood lead levels cannot be assessed under the current NHANES design. Because NHANES is a sample survey, there may be no children with elevated blood lead levels in the sample, but still some children with elevated blood lead levels in the population.

Error Estimate:

Because NHANES is based on a complex multi-stage sample design, appropriate sampling weights should be used in analyses to produce estimates and associated measures of variation. Recommended methodologies and appropriate weights are provided at the NHANES web site www.cdc.gov/nchs/nhanes.htm. Measurement error for the blood lead levels is anticipated.

New/Improved Data or Systems:

The CDC has moved to a continuous schedule for NHANES sampling, data release, and release of National Exposure reports.

References:

1) the NHANES web site, www.cdc.gov/nchs/nhanes.htm; 2) the National Exposure report web site, www.cdc.gov/exposurereport/; 3) MMWR article with the most recent estimate of the number of children with elevated blood lead levels, www.cdc.gov/mmwr/preview/mmwrhtml/mm5420a5.htm; 4) summary information on children's blood lead levels from past NHANES, www.cdc.gov/nceh/lead/research/kidsBLL.htm#National%20surveys.

FY 2005 PERFORMANCE MEASURE:

Percentage of Acre Treatments with Reduced Risk Pesticides.

Performance results related to these measures are presented in Goal 4, page 122.

Performance Database:

EPA uses an external database, Doane Marketing Research data, for this measure. The data have been reported for trend data since FY 2001 on an FY basis.

Data Source:

Primary source is Doane Marketing Research, Inc. (a private sector research database). The database contains pesticide usage information by pesticide, year, crop use, acreage and sector.

Methods, Assumptions and Suitability:

A reduced-risk pesticide must meet the criteria set forth in Pesticide Registration Notice 97-3, September 4, 1997. Reduced-risk pesticides include those which reduce the risks to human health; reduce the risks to non-target organisms; reduce the potential for contamination of groundwater, surface water, or other valued environmental resources; and/or broaden the adoption of integrated pest management strategies or make such strategies more available or more effective. In addition, biopesticides are generally considered safer (and thus reduced-risk). EPA's statistical and economics staff review data from Doane. Information is also compared to prior years for variations and trends as well as to determine the reasons for the variability.

Doane sampling plans and QA/QC procedures are available to the public at their website. More specific information about the data is proprietary and a subscription fee is required. Data are weighted and a multiple regression procedure is used to adjust for known disproportionalities (known disproportionality refers to a non proportional sample, which means individual respondents have different weights) and ensure consistency with USDA and state acreage estimates.

QA/QC Procedures:

All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review. Doane data are subject to extensive QA/QC procedures, documented at their websites. In ensuring the quality of the data, EPA's pesticide program adheres to its Quality Management Plan (QMP), approved May 2000.

The main customers for Doane pesticide usage data are the pesticide registrants. Since those registrants know about sales of their own products, they have an easy way to judge the quality of Doane provided data. If they considered the quality of the data to be poor, they would not continue to purchase the data.

Data Quality Review:

Doane data are subject to extensive internal quality review, documented at the website. EPA's statistical and economics staff review data from Doane. Information is also compared to prior years for variations and trends as well as to determine the reasons for the variability. For some crops and states, comparisons are also made with a more limited pesticide usage database from the National Agricultural Statistics of USDA.

Data Limitations:

Doane data are proprietary; thus in order to release any detailed information, the Agency must obtain approval. There is a data lag of approximately 12-18 months, due to the collection of data on a calendar year (CY) basis, time required for Doane to process data, lead time for EPA to purchase and obtain data, plus the time it takes to review and analyze the data within the office's workload.

Error Estimate:

Error estimates differ according to the data/database and year of sampling. This measure is compiled by aggregating information for many crops and pesticides. While considerable uncertainty may exist for a single pesticide on a single crop, pesticide use data at such a highly aggregated level are considered quite accurate. Doane sampling plans and QA/QC procedures are available to the public at their website. More specific information about the data is proprietary and a subscription fee is required. Data are weighted and multiple regression procedure is used to adjust for known disproportionalities and ensure consistency with USDA and state acreage estimates.

References:

EPA Website; EPA Annual Report; Annual Performance Plan and Annual Performance Report, www.ams.usda.gov/science/pdp/download.htm; Doane Marketing Research, Inc.: www.doanemr.com ; www.usda.gov/ and www.usda.gov/ ; FFDCA Sec 408(a)(2); EPA Pesticide Registration Notice 97-3, September 4, 1997; Endangered Species Act.

FY 2005 PERFORMANCE MEASURE:

Reduction in the current year production-adjusted risk screening environmental indicators (RSEI) risk-based score of releases and transfers of toxic chemicals.

Performance results related to these measures are presented in Goal 4, page 125.

Performance Database:

The RSEI Model uses annual reporting from individual industrial facilities along with a variety of other information to evaluate chemical emissions and other waste management activities. RSEI incorporates detailed data from EPA's Toxics Release Inventory (TRI) and Integrated Risk Information System, the U.S. Census, and many other sources. Due to a 2 year TRI data lag, performance data will be available for the FY 2007 Annual Performance Report. The data are based on calendar year.

Data Source:

The RSEI model incorporates data on chemical emissions and transfers and facility locations from EPA's Toxics Release Inventory; chemical toxicity data from EPA's Integrated Risk Information System; stack data from EPA's AIRS Facility Subsystem and National Emissions Trends Database and the Electric Power Research Institute; meteorological data from the National Climatic Data Center; stream reach data from EPA's Reach File 1 Database; data on drinking water systems from EPA's Safe Drinking Water Information System; fishing activity data from U.S. Fish and Wildlife; exposure factors from EPA's Exposure Factor Handbook; and population data from the U.S. Census Bureau.

Methods, Assumptions and Suitability:

The RSEI Model generates unique numerical values known as "Indicator Elements" using the factors pertaining to surrogate dose, toxicity and exposed population. Indicator Elements are unitless (like an index number, they can be compared to one-another but do not reflect *actual* risk), but proportional to the modeled relative risk of each release (incrementally higher numbers reflect greater estimated risk). Indicator Elements are risk-related measures generated for every possible combination of reporting facility, chemical, release medium, and exposure pathway (inhalation or ingestion). Each Indicator Element represents a unique release-exposure event and together these form the building blocks to describe exposure scenarios of interest. These Indicator Elements are summed in various ways to represent the risk-related results for releases users are interested in assessing. RSEI results are for comparative purposes and only meaningful when compared to other scores produced by RSEI. The measure is appropriate for year-to-year comparisons of performance. Depending on how the user wishes to aggregate, RSEI can address trends nationally, regionally, by state or smaller geographic areas.

QA/QC Procedures:

TRI facilities self-report release data and occasionally make errors. TRI has QC functions and an error-correction mechanism for reporting such mistakes. EPA updates off-site facility locations on an annual basis using geocoding techniques.

Data Quality Reviews:

RSEI depends upon a broad array of data resources, each of which has gone through a quality review process tailored to the specific data and managed by the providers of the data sources. RSEI includes data from the Toxics Release Inventory (TRI), Integrated Risk Information System (IRIS), U.S. Census, etc. All were collected for regulatory or programmatic purposes and are of sufficient quality to be used by EPA, other Federal agencies, and state regulatory agencies. Over the course of its development, RSEI has been the subject of three reviews by EPA's Science Advisory Board (U.S. EPA Office of Pollution Prevention and Toxics, Risk Screening Environmental Indicators Model, Peer Reviews. Described at www.epa.gov/opptintr/rsei/faqs.html. The RSEI model has undergone continuous upgrading since the 1997 SAB Review. Toxicity weighting methodology was completely revised and subject to a second positive review by SAB (in collaboration with EPA's Civil Rights program); air methodology was revised and groundtruthed using New York data to demonstrate high confidence; water methodology has been revised in collaboration with EPA's Water program. When the land methodology has been reviewed and revised, EPA will have completed its formal, written response to the 1997 SAB Review.

Data Limitations:

RSEI relies on data from a variety of EPA and other sources. TRI data may have errors that are not corrected in the standard TRI QC process. In the past, RSEI has identified some of these errors and corrections have been made by reporting companies. Drinking water intake locations are not available for all intakes nationwide. In coastal areas, Publicly Owned Treatment Works (POTW) water releases may go directly to the ocean, rather than nearby streams. EPA is in the process of systematically correcting potential errors regarding POTW water releases. These examples are illustrative of the data quality checks and methodological improvements that are part of the RSEI development effort. RSEI values are recalculated on an annual basis, and, resources permitting, all data sources are updated annually.

Error Estimate:

In developing the RSEI methodology, both sensitivity analyses and groundtruthing studies have been used to address model accuracy (documentation is provided on the RSEI Home Page—www.epa.gov/opptintr/rsei/). For example, groundtruthing of the air modeling performed by RSEI compared to site-specific regulatory modeling done by the state of New York showed virtually identical results in both rank order and magnitude. However, the complexity of modeling performed in RSEI, coupled with un-quantified data limitations, limits a precise estimation of errors that may either over- or under-estimate risk-related results.

New/Improved Data or Systems:

The program regularly tracks improvements in other Agency databases (e.g.,

SDWIS and Reach File databases) and incorporates newer data into the RSEI databases. Such improvements can also lead to methodological modifications in the model. Corrections in TRI reporting data for all previous years are captured by the annual updates of the RSEI model.

References:

The methodologies used in RSEI were first documented for the 1997 review by the EPA Science Advisory Board. The Agency has provided this and other updated technical documentation on the RSEI Home Page. (RSEI Home Page—www.epa.gov/opptintr/rsei/)

U.S. EPA Office of Pollution Prevention and Toxics, Risk Screening Environmental Indicators Model, Peer Reviews. Described at www.epa.gov/opptintr/rsei/faqs.html

RSEI Methodology Document (describes data and methods used in RSEI Modeling)

www.epa.gov/opptintr/rsei/docs/method2004.pdf RSEI User's Manual (PDF, 1.5 MB) explains all of the functions of the model, the data used, and contains tutorials to walk the new user through common RSEI tasks (www.epa.gov/opptintr/rsei/docs/users_manual.pdf).

A more general overview of the model can be found in the RSEI Fact Sheet (PDF, 23 KB) (www.epa.gov/opptintr/rsei/docs/factsheet_v2-1.pdf).

There are also seven Technical Appendices that accompany these two documents and provide additional information on the data used in the model. The Appendices are as follows: Technical Appendix A (PDF, 121 KB)—Listing of All Toxicity Weights for TRI Chemicals and Chemical Categories Technical Appendix B (PDF, 290 KB)—Physicochemical Properties for TRI Chemicals and Chemical Categories

Technical Appendix C (PDF, 40 KB)—Derivation of Model Exposure Parameters

Technical Appendix D (PDF, 71 KB)—Locational Data for TRI Reporting Facilities and Off-site Facilities Technical Appendix E (PDF, 44 KB)—Derivation of Stack Parameter Data Technical Appendix F (PDF, 84KB)—Summary of Differences between RSEI Data and TRI Public Data Release

FY 2005 PERFORMANCE MEASURE:

Establish short-term exposure limits for 52 percent of chemicals identified as highest priority by the Acute Exposure Guideline Levels (AEGL) Program.

Performance results related to these measures are presented in Goal 4, page 125.

Performance Database:

There is no database. Performance is measured by the cumulative number of chemicals with "Proposed", "Interim", and/or "Final" AEGL values as published by the National Academy of Sciences (NAS). The results are calculated on a fiscal year basis.

Data Source:

EPA manages a Federal Advisory Committee Act (FACA) committee that reviews short term exposure values for extremely hazardous chemicals. The supporting data, from both published and unpublished sources and from which the AEGL values are derived, are collected, evaluated, and summarized by FACA Chemical Managers and Oak Ridge National Laboratory's scientists. Proposed AEGL values are published for public comment in the Federal Register. After reviewing public comment, interim values are presented to the AEGL Subcommittee of the National Academy of Sciences (NAS) for review and comment. After review and comment resolution, the National Research Council under the auspices of the National Academy of Sciences (NAS) publishes the values as final.

Methods, Assumptions, and Suitability:

The work of the National Advisory Committee's Acute Exposure Guideline Levels (NAC/AEGL, formally chartered under the Federal Advisory Committee Act) adheres to the 1993 U.S. National Research Council/National Academies of Sciences (NRC/NAS) publication *Guidelines for Developing Community Emergency Exposure Levels for Hazardous Substances.* NAC/AEGL, in cooperation with the National Academy of Sciences' Subcommittee on AEGLs, has developed standard operating procedures (SOPs), which are followed by the program. These have been published by the National Academy Press and are referenced below. The cumulative number of AEGL values approved as "proposed" and "interim" by the NAC/AEGL FACA Committee and "final" by the National Academy of Sciences represents the measure of performance. The work is assumed to be completed at the time of final approval of the AEGL values by the NAS.

QA/QC Procedures:

QA/QC procedures include public comment via the Federal Register process; review and approval by the FACA committee; and review and approval by the NAS/AEGL committee and their external reviewers.

New/Improved Data or Systems:

This is the first time acute exposure values for extremely hazardous chemicals have been established according to a standardized process and put through such a rigorous review.

References:

Standing Operating Procedures for Developing Acute Exposure Guideline Levels for Hazardous Chemicals, National Academy Press, Washington, DC 2001.
NRC (National Research Council). 1993. Guidelines for Developing Community Emergency Exposure Levels for Hazardous Substances. Washington, DC: National Academy Press.

FY 2005 PERFORMANCE MEASURE:

Reduce occurrence of residues on a core set of 19 foods eaten by children relative to detection levels for those foods reported in 1994-1996.

Performance results related to these measures are presented in Goal 4, page 127.

Performance Database:

United States Department of Agriculture (USDA) Pesticide Data Program (PDP). The results for this annual performance measure (APM) are calculated on a calendar year basis and have been reported in the fiscal year 2003 and 2004 annual reports.

Data Source:

Data collection is conducted by the states. Information is coordinated by USDA agencies and cooperating state agencies.

Methods, Assumptions and Suitability:

The information is collected by the states and includes statistical information on pesticide use, food consumption, and residue detections, which provide the basis for realistic dietary risk assessments and evaluation of pesticide tolerance. Pesticide residue sampling and testing procedures are managed by USDA's Agricultural Marketing Service (AMS). AMS also maintains an automated information system for pesticide residue data and publishes annual summaries of residue detections. This measure helps provide information on the effect of EPA's regulatory actions on children's health via reduction of pesticide residues on children's foods. The assumption is that through reduction of pesticide residues on these foods, children's exposure to pesticides will be reduced; thus, the risk to their health diminished. This measure contributes to the Agency's goal of protecting human health and is aligned with the Food Quality Protection Act (FQPA) mandate of protecting children's health.

QA/QC Procedures:

The core of USDA's PDP's QA/QC program is Standard Operating Procedures (SOPs) based on EPA's Good Laboratory Practices. At each participating laboratory, there is a quality assurance (QA) unit which operates independently from the rest of the laboratory staff. QA Plans are followed as the standard procedure, with any deviations documented extensively. Final QA review is conducted by PDP staff responsible for collating and reviewing data for conformance with SOPs. PDP staff also monitor the performance of participating laboratories through proficiency evaluation samples, quality assurance internal reviews, and on-site visits. Additionally, analytical methods have been standardized in various areas including analytical standards, laboratory operations, data handling, instrumentation and QA/QC. With the exception of California, all samples of a commodity collected for PDP are forwarded to a single laboratory, allowing greater consistency, improved QA/QC and reduced sample loss. Program plans may be accessed at www.ams.usda.gov/science/pdp/SOPs.htm.

Data Quality Review:

In addition to having extensive QA plans to ensure reliability of the data, the PDP follows EPA's Good Laboratory Practices in standard operating procedures. A QA committee composed of quality assurance officers is responsible for annual review of program SOPs and for addressing QA/QC issues. Quality assurance units at each participating laboratory operate independently from the laboratory staff and are responsible for day-to-day quality assurance oversight. Preliminary QA/QC review is done at each participating laboratory with final review performed by PDP staff for conformance with SOPs.

Data Limitations:

Participation in the PDP is voluntary. Sampling is limited to ten states but designed in a manner to represent the food supply nationwide. The number of sampling sites and volume vary by state. Sampling procedures are described at the website, see reference below. There is a data lag of approximately 12-15 months due to collection/reporting procedures and time required for review and analysis of the data.

Error Estimate:

Uncertainties and other sources of error are minor and not expected to have any significant effect on performance assessment. More information is available on the website (See References).

References:

PDP Annual Reports, www.ams.usda.gov/science/pdp/download.htm ; www.ams.usda.gov/process/ ; CFR 40 Part 160; Food Quality Protection Act (FQPA) 1996; www.ams.usda.gov/science/pdp/SOPs.htm.

FY 2005 PERFORMANCE MEASURE:

Number of incidents and mortalities to terrestrial and aquatic wildlife caused by the 15 pesticides responsible for the greatest mortality to such wildlife.

Performance results related to these measures are presented in Goal 4, page 128.

Performance Database:

The Ecological Incident Information System (EIIS) is a national database of information on poisoning incidents of non-target plants and animals caused by pesticide use. The fields used include the number of incidents reported for each non-target plant or animal. The data used to report is the average for 3 years. Data are gathered on a calendar year basis and reported on a FY basis beginning in FY 2004. There is

approximately 2 year data lag. The Environmental Fate and Effects staff for Pesticide Programs maintain this database.

Data Source:

Data are extracted from written reports of fish and wildlife incidents submitted to the Agency by pesticide registrants under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), Section 6(a)(2), as well as incident reports voluntarily submitted by state and Federal agencies involved in investigating such incidents.

Methods, Assumptions and Suitability:

This measure helps to provide information on the effect of EPA's regulatory actions on the protection of fish and wildlife from acute toxic effects of pesticides. Incidents of fish and wildlife mortality caused by pesticides are summed annually and sums are reported as 3-year moving averages. Incidents related to known misuse of pesticides and to pesticides not currently registered in the United States are excluded, as are incidents for which the cause is highly uncertain. This indicator assumes that changes in the total number of incidents reported to the Agency reflect changes in the total number of incidents that are occurring. Inherent in this is the assumption that a consistent effort is made to investigate and report incidents year after year. This indicator is suitable only if fish and wildlife mortality incidents are investigated and reported widely enough to provide adequate monitoring of incidents throughout the country, and if the level of effort in investigating and reporting incidents are reasonably consistent over time.

QA/QC Procedures:

EPA adheres to its approved Quality Management Plan in ensuring the quality of the data. Before entering incident data in the database, a database program is used to screen for records already in the database with similar locations and dates. Similar records are then individually reviewed to prevent duplicate reporting. After each record is entered into the EIIS database, an incident report is printed that contains all the data entered into the database. A staff member, other than the one who entered the data, then reviews the information in the report and compares it to the original source report to verify data quality. Scientists using the incident database are also encouraged to report any inaccuracies they find in the database for correction.

Data Quality Review:

Internally and externally data quality reviews related to data entry have been conducted. EPA follows a quality assurance plan for accurately extracting data from reports and entering it into the EIIS database. This quality assurance plan is described in Appendix D of the Quality Management Plan for pesticides programs. The American Bird Conservancy has reviewed data in the EIIS database for records related to bird kill incidents.

Data Limitations:

This measure is designed to monitor trends in the numbers of acute poisoning events reported to the Agency. The reporting of incidents to the Agency is currently very limited. Very few fish and wildlife reports are being reported by pesticide registrants under the FIFRA 6(a)(2) requirement. This is because most fish and wildlife incidents are classified as "minor" under the current rule, and the registrants are required to report only aggregate data for these minor incidents. The aggregate data are inadequate for entering the incidents into EIIS and including them in this index because no details are reported on individual incidents, even if they are fish kills or bird kills. In 2004, only three fish kills and one wildlife kill were reported as "major" incidents with adequate data to include in this index. Incident reports voluntarily submitted from sources other than pesticide registrants also have been very scarce in recent years. Since 2003, only two state and regional government agencies have reported fish kill incidents to the Agency (the California Department of Fish and Game and the US Geological Survey) and only three have reported wildlife kills (the New York State Department of Environmental Conservation, the California Department of Fish and Game, and the Southeast Cooperative Wildlife Disease Study). Many states governments have informed the Agency that budget cuts have led to inadequate funding to investigate and report on fish and wildlife kills occurring in their states, making them unable to report these incidents to the EPA. Other states may not be reporting because they are not aware that the EPA is collecting this information. In summary, the data are currently inadequate for monitoring national trends in incidents.

Error Estimate:

Moving average counts of number of incidents per year may be interpreted as a relative index of the frequency of acute toxicity effects that pesticides are causing to fish and wildlife. The indicator numbers are subject reporting rates. If there is a change in incidents since the baseline year, it may be due to change in tracking/reporting of kills rather than change related to the use of a pesticides. Also, despite efforts to avoid duplicate counting of incidents, a few incidents likely have duplicate records in the EIIS database. A quality assurance review of bird kill incidents completed by the American Bird Conservancy in 2005 found five incidents with duplicate records, which will be corrected.

New/Improved Data or Systems:

The EPA is currently conducting a project with the American Bird Conservancy to improve the quality and quantity of data on bird kill caused by pesticides. This project should eventually result in additional reports of bird kill incidents being submitted to the Agency, but to date no additional incident reports have been obtained. The Environmental Fate and Effects Division of the Office of Pesticide Programs has begun a process to obtain an Information Collection Request (ICR) permit, which would allow soliciting state agencies for voluntary submittal of any incident reports that they produce.

References:

The Ecological Incident Information System (EIIS) is an internal EPA database. Federal Insecticide Fungicide and Rodenticide Act (FIFRA), Section 6(a)(2).

QMP: Quality Management Plan for the Office of Pesticides Program, May 20, 2000; Endangered Species Act.

FY 2005 PERFORMANCE MEASURE:

Number of risk management plan audits completed.

Performance results related to these measures are presented in Goal 4, page 128.

Data Source:

EPA's Regional offices and the states provide the data to EPA headquarters.

Methods, Assumptions and Suitability:

Data are collected and analyzed by surveying EPA's Regional offices to determine how many audits of facilities' risk management plans (RMPs) have been completed.

QA/QC Procedures:

Data are collected from states by EPA's Regional offices, with review at the Regional and Headquarters' levels.

Data Quality Review:

Data quality is evaluated by both Regional and Headquarters' personnel.

Data Limitations:

Data quality is dependent on completeness and accuracy of the data provided by state programs.

FY 2005 PERFORMANCE MEASURE:

Percentage increase of TRI chemical forms submitted over the Internet using the Toxic Release Inventory Made Easy (TRI-ME) and the Central Data Exchange (CDX).

Performance results related to these measures are presented in Goal 4, page 125.

Performance Database:

TRI System (TRIS).

Data Source:

Facility submissions of TRI data to EPA.

Methods, Assumptions, and Suitability:

As part of the regular process of opening the mail at the TRI Reporting Center, submissions are immediately classified as paper or floppy disk. This information is then entered into TRIS. The identification of an electronic submission via CDX is done automatically by the software.

QA/QC Procedures:

Currently, the mail room determines whether a submission is on paper or a floppy disk during the normal process of entering and tracking submissions. Electronic submissions via CDX are automatically tracked by the software. With an increase in electronic reporting via CDX, the manual mail room processing will be significantly reduced. Information received via hard copy are double-key entered. During the facility reconciliation process, the data entered are checked to ensure "submission-type" identification is accomplished at no less than 99 % accuracy. Accuracy is defined as accurate identification of document type.

Data Quality Reviews:

Each month the Data Processing Center conducts data quality checks to ensure 99 % accuracy of submission information captured in TRIS.

Data Limitations:

Occasionally, some facilities send in their forms in duplicative formats (e.g., paper, floppy, and/or through CDX). All submissions are entered into TRIS. The Data Processing Center follows the procedures outlined in the document "*Dupe Check Procedures*" to identify potential duplicate submissions. Submissions through CDX override duplicate submissions by disk and/or hard copy. Floppy disk submissions override duplicate paper copy submissions.

Error Estimate:

The error rate for "submission-type" data capture has been assessed to be less than 1%. The quality of the data is high.

New/Improved Performance Data or Systems:

EPA continues to identify enhancements in E-reporting capabilities via CDX.

References:

www.epa.gov/cdx/

Goal 4, Objective 2

FY 2005 PERFORMANCE MEASURES:

Number of Brownfields properties assessed.
Number of Brownfields cleanup grants awarded.
Number of properties cleaned up using Brownfields funding.
Number of acres of Brownfields property available for reuse.
Number of jobs leveraged from Brownfields activities.
Percentage of Brownfields job training trainees placed.
Amount of cleanup and redevelopment funds leveraged at Brownfields properties.

Performance results related to these measures are presented in Goal 4, page 130.

Performance Database:

The Brownfields Management System (BMS) contains the performance information identified in the above measures. Key fields related to performance measures include: Properties with Assessment Completed with Pilot/Grant Funding; Properties assessed with Targeted Brownfields Assessment Funding; Properties with Cleanup Complete; Acres Made Ready for Reuse; Cleanup/Redevelopment Jobs Leveraged; Assessment/Cleanup/Redevelopment Dollars Leveraged; Number of Participants Completing Training; Number of Participants Obtaining Employment.

Data Source:

Data are extracted from quarterly reports and property profile forms prepared by assessment, cleanup, revolving loan fund (RLF), job training, and State and Tribal 128 Voluntary Response Program cooperative agreement award recipients. Information on Targeted Brownfields Assessments is collected from EPA Regions.

Methods, Assumptions and Sustainability:

Cooperative agreement award recipients submit reports quarterly on project progress to EPA. Data used to track performance measures are extracted from quarterly reports and property profile forms by an EPA contractor. Data are then forwarded to Regional Pilot managers for review and finalization. Given the reporting cycle and the data entry/QA period, there is typically a six month data lag for BMS data.

Note that accomplishments reported by Brownfields Assessment Grantees, Brownfields Cleanup Grantees, Brownfields Revolving Loan Fund Grantees, Brownfields Job Training Grantees, Regional Targeted Brownfields Assessments, and State and Tribal 128 Voluntary Response Program Grantees all contribute towards these performance measures. "Number of Brownfields properties assessed" is an aggregate of assessments completed with Assessment Grant funding, Regional Targeted Brownfields Assessment funding, and State and Tribal 128 Voluntary Response Program funding. Number of Brownfields properties cleaned up is an aggregate of properties cleaned up by RLF Grantees, Cleanup Grantees, and State and Tribal 128 Voluntary Response Program Grantees. "Number of Acres Made Ready for Reuse" is an aggregate of acreage assessed that does not require cleanup and acreage cleaned up as reported by Assessment Grantees, Regional Targeted Brownfields Assessments, Cleanup Grantees, RLF Grantees, and State and Tribal 128 Voluntary Response Program Grantees. "Number of cleanup and redevelopment jobs leveraged" is the aggregate of jobs leveraged by Assessment, Cleanup and RLF Grantees. "Amount of cleanup and redevelopment funds leveraged at Brownfields properties" is the aggregate of funds leveraged by Assessment, Cleanup and RLF Grantees. "Percentage of Brownfields job training trainees placed" is based on the "Number of Participants Completing Training" and the "Number of Participants Obtaining Employment" reported by Job Training Grantees.

QA/QC Procedures:

Data reported by cooperative award agreement recipients are reviewed by EPA Regional pilot managers for accuracy and to ensure appropriate interpretation of key measure definitions. Reports are produced monthly with detailed data trends analysis.

Data Limitations:

All data provided voluntarily by grantees.

New/Improved Data or Systems:

The Brownfields Program developed the 'Property Profile' and 'Job Training Profile' reporting forms to be used by Assessment, Cleanup, RLF, and Job Training Grantees awarded under the Brownfields Law. These forms, approved by OMB, allow EPA to collect standardized data and will improve data quality and reliability. The BMS database has been updated to track and store the data reported in these forms. The Program is in the process of amending the OMB ICR to gather information from State and Tribal 128 Voluntary Response Program grantees. In the interim, EPA is collecting the data from Quarterly Reports.

References:

For more information on the Brownfields program, see *Reusing Land and Restoring Hope: A Report to Stakeholders from the US EPA Brownfields Program* (www.epa.gov/brownfields/news/stake_report.htm); assessment demonstration pilots and grants (www.epa.gov/brownfields/assessment_grants.htm); cleanup and revolving loan fund pilots and grants (www.epa.gov/brownfields/rlflst.htm); job training pilots and grants (www.epa.gov/brownfields/job.htm); and cleanup grants (www.epa.gov/brownfields/cleanup_grants.htm).

FY 2005 PERFORMANCE MEASURE:

Number of people in Mexico border area protected from health risks because of adequate water and wastewater sanitation systems funded through border environmental infrastructure funding (cumulative).

Performance results related to these measures are presented in Goal 4, page 132.

Performance Database:

No formal EPA database. Performance is tracked and reported quarterly by Border Environment Cooperation Commission (BECC) and North American Development Bank (NADBank). Data field is population –served by potable water and wastewater collection and treatment systems.

Data Source:

U.S. population figures from the 2000 U.S. Census (U.S. Department of Commerce, Bureau of the Census, (Washington, DC, 1990). Mexican population figures from the Mexican *Instituto Nacional de Estadistica, Geografia y Informatica, Aguascalientes*, Total Population by State (1990)); Data on U.S. and Mexican populations served by certified water/wastewater treatment systems from the BECC; Data on projects funded from the NADBank.

Methods, Assumptions and Suitability:

Summation of population from BECC and NADBank. U.S. Census data are assumed to be correct and suitable.

QA/QC Procedures:

EPA Headquarters is responsible for evaluation of reports from BECC and NADBank on drinking water and wastewater sanitation projects. Regional representatives attend meetings of the certifying and financing entities for border projects (BECC and NADBank) and conduct site visits of projects underway to ensure the accuracy of information reported (Border Environment Cooperation Commission (BECC), Cd Juarez, Chih, and North American Development Bank (NADBank), (San Antonio, TX, 2002)).

Data Quality Review:

Regional representatives attend meetings of the certifying and financing entities for border projects (BECC and NADBank) and conduct site visits of projects underway to ensure the accuracy of information reported.

Error Estimate:

Same as census data.

References:

U.S. Department of Commerce, Bureau of the Census, (Washington, DC: U.S. Department of Commerce, 1990). *Instituto Nacional de Estadistica, Geografia y Informatica, Aguascalientes*, Total Population by State (1990)

Border Environment Cooperation Commission (BECC), Cd Juarez, Chih, and North American Development Bank (NADBank), (San Antonio, TX, 2002).

FY 2005 PERFORMANCE MEASURE:

Number of environmental reviews initiated by Free Trade Area of the Americas (FTAA) countries following the enactment of the 2002 Trade Promotion Act (TPA).

Performance results related to these measures are presented in Goal 4, page 133.

Data Source:

Project / Trade Agreement Specific. One key source is the Organization of American States' Inter-American Forum on Environmental Law, which is helping a number of countries in the western hemisphere to assess the environmental effects of trade liberalization.

Methods, Assumptions and Suitability:

The decision by a developing country to conduct an environmental review of trade liberalization shows movement that environmental considerations are not an obstacle to the economic growth such countries seek through trade liberalization. In turn, the initiation of the review reflects increased willingness on the part of the government of that country to be more open with and accountable to its public. Overarching reviews will lead to project-specific environmental assessments and greater public engagement in environmental decision-making, both of which will gradually produce improved environmental performance.

QA/QC Procedures:

Verification does not involve any pollutant database analysis, but will require objective assessment of: (1) tasks completed, and (2) progress toward project goals and objectives.

Tracking development and implementation of these projects presents few challenges because EPA project staff and other USG officials maintain close contact with their counterparts. Normally, any changes become part of a public record. EPA and other USG officials can assess the manner in which these countries conduct reviews.

Assessing the effectiveness of these reviews is more subjective. Aside from feedback from Agency project staff, EPA relies, in part, on feedback from its contacts in the target trading partner countries and regions and from non-governmental organizations (NGOs) and other third parties. Because EPA works to establish long-term relationships with its contacts, the Agency is often able to assess environmental improvements in these countries and regions for a number of years following implementation of the trade agreement and/or completion of the environmental review of trade liberalization.

Data Limitations:

There can be considerable variability between the reviews conducted to date by different countries in the Americas. The variability is shown by different levels of quality and rigor in the reviews, time lags between the initiation and completion of these reviews, and time lags and uncertain linkages between such broad reviews of trade liberalization overall and the assessments of specific projects. Moreover, the environmental assessments of specific projects vary in quality and rigor as well and do not always lead to improved environmental decision-making.

Error Estimate:

None. EPA and other key players such as United States Trade Representative (USTR) and the State Department consult with their counterparts in trading partner countries and are in a position to assess the manner in which these countries undertake environmental reviews.

New/Improved Data or Systems:

In FY 2007 EPA will complete and make available to interested developing countries a new training course on how to conduct environmental reviews of free trade agreements. Those countries that participate in this training will be better able to conduct meaningful reviews on their own. We would expect to see increased quality and rigor of upcoming reviews. Thus, we will monitor for future reviews from those countries that participate in this new training course.

References:

Organization of American States: www.oas.org/usde/fida/

Goal 4, Objective 3

FY 2005 PERFORMANCE MEASURE:

Acres of habitat restored and protected nationwide as part of the National Estuary Program (NEP).

Performance results related to these measures are presented in Goal 4, page 134.

Performance Database:

The Office of Wetlands Oceans and Watersheds has developed a standardized format for data reporting and compilation, defining habitat protection and restoration activities and specifying habitat categories. The key field used to calculate annual performance is habitat acreage. Annual results have been reported since 2001 for the NEP (results are calculated on a fiscal year basis).

Information regarding habitat protection is accessible on a web page that highlights habitat loss/alteration, as well as the number of acres protected and restored by habitat type www.epa.gov/owow/estuaries/pivot/overview/intro.htm. This allows EPA to provide a visual means of communicating NEP performance and habitat protection and restoration progress to a wide range of stakeholders and decision-makers.

Data Source:

NEP documents such as annual work plans (which contain achievements made in the previous year), annual progress reports and other implementation tracking materials, are used to document the number of acres of habitat restored and protected. EPA aggregates the data provided by each NEP to arrive at a national total for the entire Program. EPA is confident that the data presented are as accurate as possible Each NEP reviews the information prior to reporting to EPA. In addition, EPA conducts regular reviews of NEP implementation to help ensure that information provided in these documents is accurate, and progress reported is in fact being achieved.

Methods, Assumptions and Suitability:

Measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported, or of the estuary overall, but it is a suitable measure of on-the-ground progress. Habitat acreage does not necessarily correspond one-to-one with habitat quality, nor does habitat (quantity or quality) represent the only indicator of ecosystem health. Nevertheless, habitat acreage serves as an important surrogate and a measure of on-the-ground progress made toward EPA's annual performance goal of habitat protection and restoration in the NEP. EPA has defined and provided examples of "protection" and "restoration" activities for purposes of measure tracking and reporting (see citation for the PIVOT website in references below.) "Restored and protected" is a general term used to describe a range of activities. The term is interpreted broadly to include created areas, protected areas resulting from acquisition, conservation easement or deed restriction, submerged aquatic vegetation coverage increases, permanent shellfish bed openings, and anadromous fish habitat increases.

QA/QC Procedures:

Primary data are prepared by the staff of the NEP based on their own reports and from data supplied by other partnering agencies/organizations (that are responsible for implementing the action resulting in habitat protection and restoration). The NEP staff are requested to follow EPA guidance to prepare their reports, and to verify the numbers. EPA then confirms that the national total accurately reflects the information submitted by each program. The Office of Water Quality Management Plan (QMP), renewed every 5 years, was approved in July 2001. EPA requires that each organization prepare a document

called a Quality Management Plan (QMP) that documents the organization's data quality policy, which addresses the quality, generation and use of the organization's data and identifies the environmental programs to which the quality system applies (e.g., programs that rely on the collection or use of environmental data.)

Data Quality Review:

No audits or quality reviews conducted yet.

Data Limitations:

It is still early to determine the full extent of data limitations. Current data limitations include: information that may be reported inconsistently (based on different interpretations of the protection and restoration definitions), acreage that may be miscalculated or misreported, and acreage that may be double counted (same parcel may also be counted by partnering/implementing agency or need to be replanted multiple years). In addition, measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported (particularly in the year of reporting), but is rather a measure of on-the-ground progress made by the NEPs.

New/Improved Data or Systems:

In 2004, NEP provided latitude and longitude data (where possible) for each project. These data are then mapped to highlight where these projects are located in each NEP study area. Not only does this assist both the individual NEP and EPA in obtaining a sense of geographic project coverage, but it provides a basis from which to begin exploring cases where acreage may be double-counted by different agencies. An on-line reporting system is also being developed for the NEPs' use that will assist in tracking habitat projects, and will help reduce EPA's QA/QC time. Currently, this system is scheduled to be in place by September 2005.

References:

Aggregate national and regional data for this measurement, as well as data submitted by the individual National Estuary Programs, is displayed numerically, graphically, and by habitat type in the Performance Indicators Visualization and Outreach Tool (PIVOT). PIVOT data are publicly available at www.epa.gov/owow/estuaries/pivot/overview/intro.htm.

FY 2005 PERFORMANCE MEASURE:

Working with partners, achieve an increase of wetlands with additional focus on biological and functional measures.

Performance results related to these measures are presented in Goal 4, page 135.

Performance Database:

The National Wetlands Inventory (NWI) of the U.S. Fish and Wildlife Service produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. This information is used by Federal, State, and local agencies, academic institutions, U.S. Congress, and the private sector. The Emergency Wetland Resources Act of 1986 directs the Service to map the wetlands of the United States. The NWI has mapped 89 percent of the lower 48 states, and 31 percent of Alaska. The Act also requires the Service to produce a digital wetlands database for the United States. About 42 percent of the lower 48 states and 11 percent of Alaska are digitized. Congressional mandates require the U.S. Fish and Wildlife Service to produce a status and trends reports to Congress at 10-year intervals.

The status and trends report is designed to provide recent and comprehensive estimates of the abundance of wetlands in the 48 conterminous States. This status and trends report indicates whether there is an actual increase in wetland acreage or if wetlands are continuing to decrease. Up-to-date status and trends information is needed to periodically evaluate the efficacy of existing Federal programs and policies, identify national or regional wetland issues, and increase public awareness of and appreciation for wetlands.

The last status and trends report[15] provided the most recent and comprehensive estimates of the current gains and losses for different types of wetlands in the United States on public and private lands from calendar year 1986 to 1997. In calendar year 1997, there were an estimated 105.5 million acres of wetlands in the conterminous United States. Of this total, 100.5 million acres (95 percent) are freshwater wetlands and 5 million acres (5 percent) are saltwater wetlands.

The President directed in his Earth Day 2004 announcement that the next National Wetlands Inventory update, status and trends report, should be completed by the end of 2005, 5 years ahead of the current schedule, and asked that the updates be done more frequently thereafter. This new information will enhance Federal, State, Tribal, local government programs' policies and decision making.

Data Source:

The National Status and Trends Report is developed and published by the U.S. Fish and Wildlife Service. This is the only Federal study that provides statistically valid estimates with a published standard error for all wetlands in the conterminous United States. Aerial imagery is the primary data source, and it is used with reliable collateral data such as topographic maps, coastal navigation charts, published soil surveys, published wetland maps, and State, local or regional studies. A random number of sites are also field verified. All photography is cataloged, numbered, tagged, and traced in a database management system.

For each plot, aerial imagery is interpreted and annotated in accordance with procedures published by the Fish and Wildlife Service. The results are compared with previous era imagery, and any changes recorded. The differences between the data sets are analyzed and a statistical estimate of the change is produced.

The five major kinds of wetlands are: 1) freshwater (or palustrine), 2) saltwater (or estuarine), 3) riverine, 4) lacustrine (or lakes and other deepwater habitats), and 5) marine wetlands. For analysis and reporting purposes, these types of wetlands were further divided into subcategories such as freshwater forested wetland, freshwater emergent wetland, estuarine and marine intertidal wetlands.

Methods, Assumptions and Suitability:

An interagency group of statisticians developed the design for the national status and trends study. The study was based on a scientific probability sample of the surface area of the 48 coterminous States. The area sampled was about 1.93 billion acres and the sampling did not discriminate based on land ownership. The study used a stratified, simple random sampling design. About 754,000 possible sample plots comprised the total population. Geographic information system software was used to organize the information of about 4,375 random sample plots. The plots were examined with the use of remote sensed data in combination with field work. Estimates of change in wetlands were made over a specific time period.

QA/QC Procedures:

The Service has developed and implemented quality assurance measures that provide appropriate methods to take field measurements, ensure sample integrity and provide oversight of analyses, which includes reporting of procedural and statistical confidence levels. The objective was to produce comprehensive, statistically valid acreage estimate of the Nation's wetlands. Because of the sample-based approach, various quality control and quality assurance measures were built into the data collection, review, analysis, and reporting stages. This includes field verification of the plots. Six Federal agencies assist with field verification work.

Data Limitations:

Certain habitats were excluded because of the limitations of aerial imagery as the primary data source to detect wetlands. This was consistent with previous wetland status and trends studies conducted by FWS.

Error Estimate:

Estimated procedural error ranged from 4 to 6 percent of the true values when all quality assurance measures have been completed. Procedural error was related to the ability to accurately recognize and classify wetlands both from multiple sources of imagery and on the ground evaluations. Types of procedural errors were missed wetlands, inclusion of upland as wetland, misclassification of wetlands, or misinterpretation of data collection protocols. The amount of procedural error is usually a function of the quality of the data collection conventions; the number, variability, training and experience of data collection personnel; and the rigor of any quality control or quality assurance measures.

New/Improved Data or Systems:

Advances in computerized cartography were used to improve data quality and geospatial integrity. Newer technology allowed the generation of existing digital plot files at any scale to overlay directly over an image base.

References:

wetlands.fws.gov/index.html

wetlands.fws.gov/Pubs_Reports/publi.htm

FY 2005 PERFORMANCE MEASURE:

Annually, in partnership with the Corps of Engineers and states, achieve no net loss of wetlands in the Clean Water Act Section 404 regulatory program.

Performance results related to these measures are presented in Goal 4, page 135.

Performance Database:

Since 1989, the goal of the Clean Water Act Section 404 program has been no net loss of wetlands.

Historically, the Corps has collected limited data on wetlands losses and gains in its Regulatory Analysis and Management System (RAMS) permit tracking database. The Corps has compiled national Section 404 wetland permitting data for the last 10 years reflecting acres of wetland impacts avoided (through the permit process), acres permitted for impacts, and acres mitigated. However, limitations in methods used for data collection, reporting and analysis resulted in difficulties in drawing reliable conclusions regarding the effects of the Section 404 program.

Data Source:

Data included in RAMS is generally collected by private consultants hired by permit applicants or Corps Regulatory Staff. Data input is generally done by Corps staff.

Methods, Assumptions and Suitability:

RAMS was designed to be an administrative aid in tracking permits, thus it lacks many of the fields necessary to adequately track important information regarding wetland losses and gains. Also, the database was modified differently for each of the 38 Corps Districts making national summaries difficult. Furthermore, the database is also proprietary making it difficult to retrofit without utilizing its original developers.

QA/QC Procedures:

Historically, there has not been a high level of QA/QC with regard to data input into RAMS. Its antiquated format and numerous administrative fields discourage use. Lack of standard terms and classification also make all aspects of data entry problematic.

Data Quality Reviews:

Independent evaluations published in 2001 by the National Academy of Sciences (NAS) and the General Accounting Office (GAO) provided a critical evaluation of the effectiveness of wetlands compensatory mitigation (the restoration, creation, or enhancement of wetlands to compensate for permitted wetland losses) for authorized losses of wetlands and other waters under Section 404 of the Clean Water Act.

The NAS determined that available data was insufficient to determine whether or not the Section 404 program was meeting its goal of no net loss of either wetland area or function. The NAS added that available data suggested that the program was not meeting its no net loss goal. Among its suite of recommendations, the NAS noted that wetland area and function lost and regained over time should be tracked in a national database and that the Corps should expand and improve quality assurance measures for data entry.

In response to the NAS, GAO, and other recent critiques of the effectiveness of wetlands compensatory mitigation, EPA and the Corps in conjunction with the Departments of Agriculture, Commerce, Interior, and Transportation released the National Wetlands Mitigation Action Plan on December 26, 2002. The Plan includes 17 tasks that the agencies will complete in FY 07 to improve the ecological performance and results of compensatory mitigation. (Note: some Mitigation Action Plan items may be subsumed by the Corps' mitigation rulemaking expected to be finalized in calendar year 2006.)

Data Limitations:

As previously noted, RAMS currently provides the only national data on wetlands losses and gains in the Section 404 Program. Also, as previously noted, there are a number of concerns regarding the conclusions that can be drawn from these numbers. Data quality issues include:

- Inability to separate restoration, creation, enhancement and preservation acreage from the aggregate "mitigation" acreage reported;
- Lack of data regarding how much designated mitigation acreage was actually undertaken, and how much of that total was successful;
- Lack of data regarding how much of the permitted impacts actually occurred; and
- Limitations on identifying acres "avoided," because the figure is only based on the difference between original proposed impacts and impacts authorized. Often, permit applicants who are aware of the 404 program's requirements to avoid and minimize impacts to wetlands, make initial site selection and site design decisions that minimize wetland impacts prior to submitting a permit application. Such avoidance decisions benefit applicants, as their applications are more likely to be accepted and processed with minor changes. This behavioral influence that the program engenders is difficult to capture and quantify, but contributes considerable undocumented "avoided" impacts.

New/Improved Data or Systems:

The EPA and the Corps have acknowledged the need for improved 404 tracking. The Corps is currently piloting a new national permit tracking database called ORM to replace its existing database (RAMS). As part of the MAP, the Corps is working with EPA and the other Federal agencies and states to ensure that the version of ORM that is ultimately deployed will adequately track wetlands gains and losses. ORM is being designed to provide improved tracking regarding:

- Type of impacts
- Type and quantity of habitat impacted (Using Hydrogeomorphic and Cowardin classification systems)
- Type and quantity of habitat mitigated (Using Hydrogeomorphic and Cowardin classification systems)
- Type and quantity of mitigation (restoration, creation, enhancement, or preservation)
- Differentiating stream mitigation (in linear feet) from wetlands mitigation (in acres)
- Spacial tracking via GIS for both impact and mitigation sites *(planned)*
- Functional losses (debits) at the impact site and functional gains at the mitigation site (credits) if assessment tool is available and applied

References:

www.mitigationactionplan.gov/

FY 2005 PERFORMANCE MEASURE:

Prevent water pollution and protect aquatic ecosystems so that overall ecosystem health of the Great Lakes is improved.

Performance results related to these measures are presented in Goal 4, page 136.

Performance Database:

USEPA's Great Lakes National Program Office (GLNPO) will collect and track the eight (8) components of the index and publish the performance results as part of annual reporting under the Government Performance and Results Act (GPRA) and as online reporting of GLNPO's monitoring program, epa.gov/glnpo/glindicators/index.html. Extensive databases for the indicator components are maintained by GLNPO (phosphorus concentrations, contaminated sediments, benthic health, fish tissue contamination), by binational agreement with Environment Canada (air toxics deposition), and by local authorities who provide data to the USEPA (drinking water quality, beach closures). A binational team of scientists and natural resource managers is working to establish a long term monitoring program to determine extent and quality of coastal wetlands.

Data Source:

Data for the index components are tracked internally and reported through the State of the Lakes Ecosystem Conference (SOLEC) process. The document, "State of the Great Lakes 2005 -A Technical Report," presents detailed indicator reports prepared by primary authors, including listings of data sources. Depending on the indicators, data sources may include U.S. and Canadian federal agencies, state and provincial agencies, municipalities, research reports and published scientific literature. Information from the following indicators is used to evaluate the Index components: Coastal Wetlands group of indicators: *Coastal Wetland Invertebrate Community*

Health; Coastal Wetland Fish Community Health; Coastal Wetland Amphibian Diversity and Abundance; Coastal Wetland Area by Type; Coastal Wetland Plant Community Health; Effects of Water Levels Fluctuations. Phosphorus Concentrations and Loadings; Concentrations of Contaminants in Sediment Cores; Benthic Health group of indicators: *Hexagenia; Abundances of the Benthic Amphipod Diporeia spp.*; Contaminants in Sport Fish; Beach Advisories, Postings and Closures; Drinking Water Quality; Atmospheric Deposition of Toxic Chemicals.

Methods, Assumptions, and Suitability:

The Index is based on a 40 point scale where the rating uses select Great Lakes State of the Lakes Ecosystem indicators (i.e., coastal wetlands, phosphorus concentrations, Area of Concern (AOC) sediment contamination, benthic health, fish tissue contamination, beach closures, drinking water quality, and air toxics deposition). Each component of the Index is based on a 1 to 5 rating system, where 1 is poor and 5 is good. Authors of SOLEC indicator reports use best professional judgment to assess the overall status of the ecosystem component in relation to established endpoints or ecosystem objectives, when available. Each indicator is evaluated for Status (good, fair, poor, mixed) and Trend (improving, unchanging, deteriorating, undetermined). To calculate the Index, the data for each indicator are compared to the evaluation criteria for the numeric, 1 to 5, rating system. Each of the index components is included in the broader suite of Great Lakes indicators, which was developed through an extensive multi-agency process to satisfy the overall criteria of necessary, sufficient and feasible. Information on the selection process is in the document, "Selection of Indicators for Great Lakes Basin Ecosystem Health, Version 4."

QA/QC Procedures:

GLNPO has an approved Quality Management System in place[1] (see reference #1 below) that conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management.

The SOLEC process relies on secondary use of data, i.e., data for many of the indicators are collected, maintained and analyzed by agencies and organizations other than USEPA. Participating agencies and organizations follow their own QA/QC procedures to assure high quality data. A Quality Assurance Project Plan (QAPP) was developed to document procedures for data assessment and review for the indicators reports prepared for the State of the Great Lakes 2005 report. See "State of the Lakes Ecosystem Conference 2004 QAPP".

Data Quality Review:

GLNPO's Quality Management System has been given "outstanding" evaluations in previous peer and management reviews[2] (see reference #2 below). GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.

An external Peer Review of SOLEC processes and products was conducted in 2003 by an international panel of experts familiar with large-scale regional or national indicator and reporting systems. Panel findings were generally positive and several recommendations were made to consider for future SOLEC events and reports. Many of the recommendations have been implemented, and others are being considered for feasibility. The final report by the review panel is available online at epa.gov/glnpo/solec/index.html. See "State of the Lakes Ecosystem Conference Peer Review Report" in the SOLEC 2004 section.

A second review of the suite of Great Lakes indicators was conducted by Great Lakes stakeholders in 2004. As a direct result of the findings and recommendations from the participants, several indicators were revised, combined or dropped, and a few others were added. The indicators were also regrouped to allow the user to more easily identify the indicators relevant to particular ecosystem components or environmental issues. The final report from the review is available online at epa.gov/glnpo/solec/index.html. See "State of the Lakes Ecosystem Conference Peer Review Report, Part 2: Stakeholder Review of the Great Lakes Indicators" in the SOLEC 2004 section.

Data Limitations:

Data limitations vary among the indicator components of the Index. The data are especially good for phosphorus concentrations, fish tissue contamination, benthic health, and air toxics deposition. The data associated with other components of the index (coastal wetlands, AOC sediment contamination, beach closures, and drinking water quality) are more qualitative. Some data are distributed among several sources, and without an extensive trend line. Limitations for each of the index components are included in the formal indicator descriptions in the document, "Selection of Indicators for Great Lakes Basin Ecosystem Health, Version 4."

Error Estimate:

Error statistics for the Great Lakes Index have not been quantified. Each unit of the 40 point scale represents 2.5% of the total, so any unit change in the assessment of one of the component indicators would result in a change of the index of that magnitude. The degree of environmental change required to affect an indicator assessment, however, may be significantly large.

New/Improved Data or Systems:

The data system specifically for this index is being developed. Data continue to be collected through the SOLEC process by various agencies, including GLNPO. Efforts are currently in progress to integrate various Great Lakes monitoring programs to better meet SOLEC objectives and to increase efficiencies in data collection and reporting.

References:

- "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.
- *"GLNPO Management Systems Review of 1999."* Unpublished—in USEPA Great Lakes National Program Office files.
- "State of the Lakes Ecosystem Conference 2004 QAPP." Unpublished. Prepared as part of Cooperative Agreement between USEPA and Environment Canada.
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All SOLEC documents, background reports, indicator reports, indicator development processes, conference agenda, proceedings and presentations are available online at epa.gov/glnpo/solec/index.html The documents are sorted by SOLEC year and include the State of the Great Lakes reports which are released the following calendar year.

FY 2005 PERFORMANCE MEASURE:

The average concentrations of PCBs in whole lake trout and walleye samples will decline.

Performance results related to these measures are presented in Goal 4, page 136.

Performance Database:

Great Lakes National Program Office (GLNPO) Great Lakes Fish Monitoring Program (GLFMP) 1(see reference #1 below). This program is broken into two separate elements, Element 1—Open Water Trend Monitoring and Element 2—Game Fish Fillet Monitoring. Each program collects and monitors contaminants in Great Lakes fish at alternating locations throughout the Great Lakes Basin; fish are collected at one set of sites during even years and at another set in odd years. Element 1 began with the collection of data in Lake Michigan in 1972 and the additional lakes were added in 1976. Element 2 began with the collection of data in all five of the Great Lakes in the early 1980's. In FY06, the database will contain QA/QC data from fish collected in 2004. Data are reported on a calendar year basis and are specific to the even or odd year sampling schedule (even year sites are only compared to other even year sites etc.)

Data Source:

GLNPO is the principal source of data for the Great Lakes Fish monitoring program. The Great Lakes States and Tribes assist with fish collection. Previous cooperating organizations include the U.S. Geological Survey (USGS), the U.S. Fish and Wildlife Service (USFWS), and the Food and Drug Administration (FDA).

Methods, Assumptions, and Suitability:

This indicator provides concentrations of selected organic contaminants in Great Lakes open water fish. The Great Lakes Fish Monitoring Program is broken into two separate elements that monitor potential exposure to contaminant concentrations for wildlife (Element 1) and humans through consumption (Element 2). Only Element 1 is included in this indicator as it is the only portion of the program that can be used to determine trends.

The first element, Open Lakes Trend Monitoring Program, was created to: (1) determine time trends in contaminant concentrations, (2) assess impacts of contaminants on the fishery using fish as biomonitors, and (3) assess potential risk to the wildlife that consume contaminated fish. The first element includes data from ten 600-700 mm lake trout *(Salvelinus namaycush)* whole fish composites (5 fish in each composite) from each of the lakes. Since sufficient lake trout are not found in Lake Erie, data for 450 – 550 mm walleye *(Stizostedion vitreum vitreum)* are used for that Lake.

All GLFMP data are quality-controlled and then loaded into the Great Lakes Environmental Database (GLENDA). Included in GLENDA are flags for each data point that can be used to evaluate the usability of the data. Since concentrations can vary from year to year due to differences in site (food web etc.), comparing concentrations from one year to the next is not appropriate. This performance measure examines the average percent decline for the **long-term trend** using an exponential decrease function. Each year the appropriate average percent decline is calculated after adding new data. A baseline percent decrease was determined using data through 2000 or 1999, and the aim is that this rate of decrease will continue.

QA/QC Procedures:

GLNPO has an approved Quality Management System in place[2] (see reference #2 below). that conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management. The Quality Assurance (QA) plan that supports the analytical portion of the fish contaminant program is approved and available online[3] (see reference #3 below). The draft field sampling Quality Assurance Project Plan (QAPP) is being revised and will be submitted to the GLNPO QA Officer for review upon the completion of the Quality Management Plan.

Data Quality Review:

GLNPO's Quality Management System has been evaluated as "outstanding" in previous peer and management reviews[4] (see reference #4 below). GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.

Data Limitations:

The top predator fish (lake trout) program is not well-suited to portray localized changes. Nevertheless, data collected at a certain site (odd year or even year sites) can be compared to data collected from the same site. In addition, only very general comparisons can be made of contaminant concentrations between lakes.

Error Estimate:

The data quality objective of the fish contaminant program was to detect a 20% change in each measured contaminant concentration between two consecutively sampled periods at each site. Based on changing environmental conditions, the data quality objective has been revised to detect trends in concentration of 0.1 mg/kg/year based on three consecutive sampling periods (6 years, as sites are sampled every other year) for a specific site, with a power of 80% or greater. The program was designed to reach that goal with 95% confidence.

New/Improved Data or Systems:

The GLENDA database is a significant new system with enhanced capabilities. Existing and future fish data will be added to GLENDA.

References:

- *"The Great Lakes Fish Monitoring Program—A technical and Scientific Model For Interstate Environmental Monitoring."* September, 1990. EPA503/4-90-004.
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- *"Great Lakes Fish Monitoring Program—Quality Assurance Project Plan for Sample Collection Activities"*, Great Lakes National Program Office. www.epa.gov/glnpo/glindicators/fishtoxics/GLFMP_QAPP_082504.pdf
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- *"GLNPO Management Systems Review of 1999."* Unpublished—in USEPA Great Lakes National Program Office files.

FY 2005 PERFORMANCE MEASURE:

Average concentrations of toxic chemicals in the air in the Great Lakes basin will decline.

Performance results related to these measures are presented in Goal 4, page 136.

Performance Database:

Great Lakes National Program Office (GLNPO) integrated atmospheric deposition network [1] (see reference #1 below) (IADN) operated jointly with Environment Canada. Reporting starts with 1992 data and includes concentrations of polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and organochlorine pesticides in air and precipitation; however, this Performance Measure addresses only PCBs. Monitoring results from 2005 will be reported in 2007. Data are reported on a calendar year basis.

Data Source:

GLNPO and Environment Canada are the principal sources of the data. Data also come through in-kind support and information sharing with other Federal agencies and Canada.

Methods, Assumptions, and Suitability:

There are five master IADN stations, one for each lake, which are supplemented by satellite stations in other locations. The master stations are located in remote areas

and are meant to represent regional background levels. Concentrations from the master stations are used for the performance measure. Concentrations from the satellite stations in Chicago and Cleveland are also sometimes used to demonstrate the importance of urban areas to atmospheric deposition to the Lakes.

Air samples are collected for 24 hours using high-volume samplers containing an adsorbent. Precipitation samples are collected as 28-day composites. Laboratory analysis protocols generally call for solvent extraction of the organic sampling media with addition of surrogate recovery standards. Extracts are then concentrated followed by column chromatographic cleanup, fractionation, nitrogen blow-down to small volume (about 1 mL) and injection (typically 1 uL) into gas chromatography instruments.

All IADN data are loaded and quality controlled using the Research Database Management System (RDMQ), a Statistical Analysis System (SAS) program. RDMQ provides a unified set of quality assured data, including flags for each data point that can be used to evaluate the usability of the data. Statistical summaries of annual concentrations are generated by the program and used as input into an atmospheric loading calculation. The loadings calculation is described in detail in the Technical Summary referenced below. However, calculating loadings requires additional data and constants that introduce further error. Therefore, the averaged annual concentrations rather than the loadings are used in the performance measure. Concentrations can vary from year to year due to differences in weather (temperature, wind patterns, etc.), so comparing concentrations from one year to the next is not always appropriate. This performance measure examines the average percent decline for the **long-term trend** determined using an exponential decrease function. Each year the average percent decline is calculated after adding new data. A baseline percent decrease was determined using data through 2000, and the aim is that this rate of decrease will continue.

QA/QC Procedures:

GLNPO has a Quality Management System in place, which conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management2 (see reference #2 below). Quality Assurance Project Plans are in place for the laboratory grantee, as well as for the network as a whole. A jointly-funded QA contractor conducts laboratory and field audits, tracks QA statistics, and carries out special QA studies. Data from all contributing agencies are quality-controlled using the SAS-based system.

Data Quality Review:

GLNPO's Quality Management System has been evaluated as "outstanding" in previous peer and management reviews[3] (see reference #3 below). GLNPO has implemented all recommendations from these external audits and complies with Agency Quality Standards[4] (see reference #4 below). The IADN program has a joint Canadian-US quality system and binational Steering Committee that meets periodically in person or via conference calls to make decisions on network operation and data management and quality.

A regular set of laboratory and field blanks is taken and recorded for comparison to the IADN field samples. In addition, a suite of chemical surrogates and internal standards is used extensively in the analyses. A jointly-funded QA contractor conducts laboratory and field audits, tracks QA statistics, and carries out special QA studies. As previously mentioned, data from all contributing agencies are quality-controlled using a SAS-based system.

Data Limitations:

The sampling design is dominated by rural sites that under-emphasize urban contributions to deposition; thus, although the data are very useful for trends information, there is less assurance of the representativeness of deposition to the whole lake. U.S. and Canadian laboratories use somewhat different sampling and analytical methods; QA studies have found that differences in resulting data are attributable mostly to the sampling differences. There are gaps in open lake water column organics data, thus limiting our ability to calculate atmospheric loadings. This gap is being addressed through the recent implementation by GLNPO of the Great Lakes Aquatic Contaminant Surveillance (GLACS) program, which will collect water contaminant data in the Lakes.

In the past, there has been a lag in the data from the Canadian sites (Burnt Island on Lake Huron and Point Petre on Lake Ontario). U.S. data is usually reported 2 years after it is collected (i.e., 2002 data was reported in 2004); the Canadian data may not be available on this schedule.

Error estimate:

The performance measure examines the long-term trend in concentrations. Concentrations have an error of +/- 40%, usually less. Differences between laboratories have been found to be 40% or less. This is outstanding given the very low levels of these pollutants in the air and the difficulty in analysis. Improvements in quality assurance (use of a clean lab for Canadian precipitation analysis, making calibration standards consistent among agencies, etc.) are helping to further close this gap.

New/Improved Data or Systems:

GLNPO expects to post joint data that has passed quality review to < binational.net/ >, a joint international Web Site, and to the IADN Web Site at < www.msc.ec.gc.ca/iadn/ >. Copies of IADN data are now held in U.S. and Canadian databases. Efforts are being made to be able to streamline data requests through the National Atmospheric Chemistry Database (NAtChem), which includes atmospheric data from many North American networks. Environment Canada management is working to reduce the data lag from the Canadian IADN stations.

References:

- 1. *"Great Lakes National Program Office Indicators. Air Indicators."* www.epa.gov/glnpo/glindicators/air.html
- Details of these analyses can be found in the Laboratory Protocol Manuals or the agency project plans, which can be found on the IADN resource page at www.epa.gov/glnpo/monitoring/air/iadn/iadn.html
- Overall results of the project can be found in *"Technical Summary of Progress under the Integrated Atmospheric Deposition Program 1990-1996*" and the *"Technical Summary of Progress under*

the Integrated Atmospheric Deposition Network 1997-2002". Both (as well as the Atmospheric Loadings reports) can be found on the IADN resource page.

- 2. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.
- *"GLNPO Management Systems Review of 1999."* Unpublished—in USEPA Great Lakes National Program Office files.
- *"Integrated Atmospheric Deposition Network Quality Assurance Program Plan—Revision 1.1*. Environment Canada and USEPA. June 29, 2001. Unpublished—in USEPA Great Lakes National Program Office files.

FY 2005 PERFORMANCE MEASURE:

Restore and delist Areas of Concern within the Great Lakes Basin.

Performance results related to these measures are presented in Goal 4, page 136.

Performance Database:

USEPA's Great Lakes National Program Office will track the cumulative total Areas of Concern (AOC) and post that information www.epa.gov/glnpo/aoc/index.html Forty-three AOCs have been identified: 26 located entirely within the United States; 12 located wholly within Canada; and five that are shared by both countries. Since 1987, GLNPO has tracked the 31 that are within the US or shared; however, none of these are currently restored and delisted. Information is reported on a calendar year basis, however the system is being designed for semi-annual or more frequent updates.

Data Source:

Internal tracking and communications with Great Lakes States, the US Department of State and the International Joint Commission (IJC).

Methods, Assumptions, and Suitability:

USEPA's Great Lakes National Program Office is in regular communication with the Great Lakes States, the US Department of State and the IJC, and is responsible for coordinating and overseeing the de-listing of AOCs. Generally speaking, under the Great Lakes Water Quality Agreement, an AOC is an area in the Great Lakes determined to have significant beneficial use impairments, such as restrictions on fish and wildlife consumption, fish tumors, eutrophication, beach closings, added costs to agriculture or industry. In 1989, the IJC established a review process and developed AOC listing/delisting criteria (www.ijc.org/rel/boards/annex2/buis.htm#table1) for existing and future AOCs. In 2001, the U.S. Policy Committee, led by GLNPO and including State, Tribal, and Federal agencies responsible for Great Lakes environmental issues, developed delisting guidelines for domestic AOCs (http://www.epa.gov/glnpo/aoc/delist.html) and for the binational AOCs shared by Michigan and Ontario http://www.epa.gov/glnpo/aoc/delist.html—appendix 5).

QA/QC Procedures:

GLNPO has an approved Quality Management System in place1 (see reference #1 below) that conforms to the USEPA Quality Management Order and is audited every 3 years in accordance with Federal policy for Quality Management.

Data Quality Review:

GLNPO's Quality Management System has been given "outstanding" evaluations in previous peer and management reviews2 (see reference #2) below. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.

References:

GLNPO will develop and maintain the appropriate tracking system once there are any de-listed U.S. or binational Areas of Concern. Information regarding Areas of Concern is currently available online at: www.epa.gov/glnpo/aoc/index.html

- "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.
- "GLNPO Management Systems Review of 1999." Unpublished—in USEPA Great Lakes National Program Office files.

FY 2005 PERFORMANCE MEASURE:

Cubic yards (in millions) of contaminated sediment remediated in the Great Lakes.

Performance results related to these measures are presented in Goal 4, page 136.

Performance Database:

Data tracking sediment remediation are compiled in two different formats. The first is a matrix that shows the annual and cumulative totals of contaminated sediment that was remediated in the Great Lakes basin in the reporting year and from 1997 for each Area of Concern or other non-Areas of Concern with sediment remediation. The second format depicts the yearly totals on a calendar year basis graphically. These databases are reported approximately 1 year after the completion of work.

Data Source:

GLNPO collects sediment remediation data from various State and Federal project managers across the Great Lakes region that conduct and coordinate contaminated sediments work. These data are obtained directly from the project manager via an information fact sheet the project manager completes for any site in the Great Lakes basin that has performed any remedial work on contaminated sediment. The project manager also indicates whether an approved Quality Assurance Project Plan (QAPP) was used in the collection of data at the site. GLNPO does not accept unsolicited data

without adequate assurance that a QAPP was in place and the reporters of the data are not likely to be biased.

Methods, Assumptions, and Suitability:

The data collected to track sediment remediation in the Great Lakes show the amount of sediment remediated (dredged, capped, other) for that year, the amount of sediment remediated in prior years, and the amount of sediment remaining to be addressed for a particular site. This format is suitable for year-to-year comparisons for individual sites.

QA/QC Procedures:

GLNPO relies on the individual government/agency project managers to provide information on whether an approved QAPP was in place during remediation of contaminated sediment. This information is used to decide if the data provided by the project manager are reliable for GLNPO reporting purposes. If an approved QAPP was not used, sediment data would not likely be reported by GLNPO, unless GLNPO finds that alternative information is available that provides sufficient quality documentation for the project and associated data. This approach allows GLNPO to use best professional judgment and flexibility in reporting data from any cases where there was not a QAPP, but (a) the remedial action is noteworthy and (b) the project was conducted by recognized entities using widely accepted best practices and operating procedures.

The tracking database houses information on the calculated amount of sediment remediated at individual sites as provided by the project managers. The individual site project managers are responsible for completing the data request forms, reviewing draft figures to verify that the GLNPO project manager transferred the data correctly, and providing any updated or improved estimates. It is GLNPO's responsibility to determine if the data are usable based upon the information sheet provided by the project managers. GLNPO does not attempt to verify mass and volume estimates due to the variability in how to calculate them. GLNPO ensures that the estimates provided make sense for the site, and that all estimates are reported in the same units. GLNPO management and Sediment Team members review the data, in the graphic and matrix formats, prior to reporting. GLNPO's Sediment Team works closely with partners and has confidence in those who provide data for the summary statistics. This familiarity with partners and general knowledge of ongoing projects allows GLNPO management to detect mistakes or questionable data.

Data Quality Review:

The data, in both the graphic and matrix formats, are reviewed by individual project managers, GLNPO's Sediment Team, and management prior to being released. Data quality review procedures are outlined in the QAPP referenced below. GLNPO's Quality Management System has been given "outstanding" evaluations in previous peer and management reviews. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality Standards.

Data Limitations:

The data provided in the sediment tracking database should be used as a tool to track sediment remediation progress at sites across the Great Lakes. Many of the totals for sediment remediation are estimates provided by project managers. For specific data uses, individual project managers should be contacted to provide additional information.

Error Estimate:

The amount of sediment remediated or yet to be addressed should be viewed as estimated data. A specific error estimate is not available.

New/Improved Data or Systems:

Existing tracking systems are anticipated to remain in place.

References:

- Giancarlo Ross, M.B. Quality Assurance Project Plan for Great Lakes Sediment Remediation Project Summary Support." Unpublished—in USEPA Great Lakes National Program Office files.
- Giancarlo Ross, M.B. "Sediment Remediation Matrix". Unpublished —in USEPA Great Lakes National Program Office files.
- Giancarlo Ross, M.B. "Sediment Remediation Pie Charts". Unpublished—in USEPA Great Lakes National Program Office files.
- Giancarlo Ross, M.B. "Compilation of Project Managers Informational Sheets". Unpublished—in USEPA Great Lakes National Program Office files.

FY 2005 PERFORMANCE MEASURE:

Acres of submerged aquatic vegetation (SAV) present in the Chesapeake Bay.

Performance results related to these measures are presented in Goal 4, page 139.

Performance Database:

SAV acres in Chesapeake Bay. Total acres surveyed and estimated additional acres from 1978 through 2004, excluding the years 1979-1983 and 1988 when no surveys were conducted. The FY 2006 Annual Performance Report for this measure will be based on the results of the survey conducted the previous calendar year (2005). We expect to receive the preliminary survey results for calendar year 2005 in April 2006. We expect to receive the preliminary survey results for calendar year 2006 in March 2007.

Data Source:

Virginia Institute of Marine Sciences provides the data (via an EPA Chesapeake Bay Program (CBP) grant to Virginia Institute of Marine Sciences). EPA has confidence in the third party data and believes the data are accurate and reliable based on QA/QC procedures described below.

Methods, Assumptions and Suitability:

The SAV survey is a general monitoring program, conducted to optimize precision and accuracy in characterizing annually the status and trends of SAV in tidal portions of the Chesapeake Bay. The general plan is to follow fixed flight routes over shallow water areas of the Bay, to comprehensively survey all tidal shallow water areas of the Bay and its tidal tributaries. Non-tidal areas are omitted from the survey. SAV beds less than 1

square meter are not included due to the limits of the photography and interpretation. Annual monitoring began in 1978 and is ongoing. Methods are described in the Quality Assurance Project Plan (QAPP) on file for the EPA grant and at the VIMS web site (www.vims.edu/bio/sav/).

QA/QC Procedures:

Quality assurance project plan for the EPA grant to the Virginia Institute of Marine Sciences describes data collection, analysis, and management methods. This is on file at the EPA Chesapeake Bay Program Office. The VIMS web site at www.vims.edu/bio/sav/ provides this information as well. Metadata are included with the data set posted at the VIMS web site (www.vims.edu/bio/sav/metadata/recent.html).

Data Quality Reviews:

This indicator has undergone extensive technical and peer review by state, Federal and non-government organization partner members of the SAV workgroup and the Living Resources subcommittee. Data collection, data analysis and QA/QC are conducted by the principal investigators/scientists. The data are peer reviewed by scientists on the workgroup. Data selection and interpretation, the presentation of the indicator, along with all supporting information and conclusions, are arrived at via consensus by the scientists and resource manager members of the workgroup. The workgroup presents the indicator to the subcommittee where extensive peer review by Bay Program managers occurs. There have been no data deficiencies identified in external reviews.

Data Limitations:

Due to funding constraints, there were no surveys in the years 1979-1983 and 1988. Spatial gaps in 1999 occurred due to hurricane disturbance and subsequent inability to reliably photograph SAV. Spatial gaps in 2001 occurred due to post-nine-eleven flight restrictions near Washington D.C. Spatial gaps in 2003 occurred due to adverse weather in the spring and summer and Hurricane Isabel in the fall.

New/Improved Data or Systems:

Some technical improvements (e.g., photointerpretation tools) were made over the 22 years of the annual SAV survey in Chesapeake Bay.

References:

See Chesapeake Bay SAV special reports at www.vims.edu/bio/sav/savreports.html and bibliography at www.vims.edu/bio/sav/savchespub.html. The SAV distribution data files are located www.vims.edu/bio/sav/savdata.html and also at www.chesapeakebay.net/pubs/statustrends/88-data-2002.xls. The SAV indicator is published at www.chesapeakebay.net/status.cfm?sid=88.

FY 2005 PERFORMANCE MEASURES:

Reduce nitrogen loads entering Chesapeake Bay by 74 million pounds per year.
Reduce phosphorus loads entering Chesapeake Bay by 8.7 million pounds per year.
Reduce sediment loads entering Chesapeake Bay by 1.06 million tons per year.

Performance results related to these measures are presented in Goal 4, page 140.

Performance Database:

Nutrient and Sediment Loads Delivered to the Chesapeake Bay. The Bay data files used in the indicator are located at www.chesapeakebay.net/pubs/statustrends/186-data-2003.xls. Data have been collected in 1985, 2000, 2001, 2002, 2003 and are expected on an annual basis after 2003. There is a 2 year data lag. Load data are from Chesapeake Bay watershed portions of NY, MD, PA, VA, WV, DE, and DC.

The FY 2007 Annual Performance Report for these measures will be based on the results of the 2005 data collection. We expect to receive the preliminary results for 2005 in January 2007.

Data Source:

State/district data are provided to the Chesapeake Bay Program Office for input into the Chesapeake Bay Program Watershed Model.

Methods, Assumptions and Suitability:

The data are of high quality. Data are consolidated by watershed boundaries at the state level and provided to the Chesapeake Bay Program Office for input into the watershed model.

What is the Watershed Model? A lumped parameter Fortran based model (HSPF) that mimics the effects of hydrology, nutrient inputs, and air deposition on land and outputs runoff, groundwater, nutrients and sediment to receiving waters. Ten years of simulation are used and averaged to develop the reduction effects of a given set of Best Management Practices (BMPs). Using a 10-year average of actual weather (hydrologic, temperature, wind, etc.) ensures wet, dry and average conditions for each season are included. The effectiveness of the model is dependent upon the quality of the assumptions, BMPs and landuse descriptions used. The model is calibrated extensively to real-time monitoring, outside peer review and continual updates as better information, data collection and computer processing power become available.

What are the input data? The model takes meteorological inputs such as precipitation, temperature, evapotranspiration, wind speed, solar radiation, dewpoint, and cloud cover to drive the hydrologic simulation. The changes in nutrient outputs are primarily determined by such factors as land use acreage, BMPs, fertilizer, manure, atmospheric deposition, point sources, and septic loads.

BMPs: Watershed Model BMPs include all nutrient reduction activities tracked by the jurisdictions for which a source has been identified, cataloged and assigned an efficiency. Efficiencies are based on literature review, recommendations of the appropriate source workgroup and approved by the Nutrient Subcommittee. It is the responsibility of the jurisdictions to track and report all nutrient reduction activities within their borders and maintain documentation to support submissions.

Land use acreage is determined by combining analyses of satellite imagery and county-based databases for agricultural activities and human population. Fertilizer is determined by estimated application rates by crops and modified by the application of nutrient management BMPs. Manure appli-

cations are determined by an analysis of animal data from the census of agriculture.

Atmospheric deposition is determined by an analysis of National Atmospheric Deposition Program (NADP) deposition data and modified by scenarios of the Regional Acid Deposition Model. Point Source loads are determined from Discharge Monitoring Reports. Septic loads are estimated in a study commissioned by the CBP.

www.chesapeakebay.net/pubs/127.pdf

www.chesapeakebay.net/pubs/114.pdf

www.chesapeakebay.net/pubs/112.pdf

www.chesapeakebay.net/pubs/777.pdf

What are the model outputs? The watershed model puts out daily flows and nitrogen, phosphorus, and sediment loads for input to the water quality model of the Chesapeake Bay. The daily loads are averaged over a 10-year hydrologic period (1985-1994) to report an average annual load to the Bay. The effect of flow is removed from the load calculations.

What are the model assumptions? BMPs: Model assumptions are based on three conditions: knowledge, data availability and computing power. The ability to alter what is used in the watershed model is a function of the impact the change would have on calibration. In many cases there is new information, data or methodologies that would improve the model, but changes are not possible because of the impact on the current calibration.

Changes in manure handling, feed additives, new BMPs and some assumptions could be incorporated into the model without impacting the calibration. In these cases, the changes were made.

Other input assumptions, such as multiple manure application levels, increasing the number and redefining some land uses, defining new nutrient or sediment sources, adjusting for varying levels of management (range of implementation levels) are items scheduled for incorporation in the new model update (2005).

Data are collected from states and local governments programs. Methods are described at www.chesapeakebay.net/data/index.htm, (refer to CBP Watershed Model Scenario Output Database, Phase 4.3). For more information contact Kate Hopkins at hopkins.kate@epa.gov or Jeff Sweeney jsweeney@chesapeakebay.net.

QA/QC Procedures:

State offices have documentation of the design, construction and maintenance of the databases used for the performance measures, showing they conform to existing U.S. Department of Agriculture Natural Resources Conservation Service (USDA/NRCS) technical standards and specifications for nonpoint source data and EPA's Permit Compliance System (PCS) standards for point source data. State offices also have documentation of implemented Best Management Practices (BMPs) based on USDA NRCS standards and specification and the Chesapeake Bay Program's protocols and guidance. BMPs are traditionally used to reduce pollutant loads coming from nonpoint sources such as urban/suburban runoff, agriculture, and forestry activities.

References include: the USDA NRCS Technical Guide and Appendix H from the Chesapeake Bay Program (contact Russ Mader at mader.russ@epa.gov or Kate Hopkins at hopkins.kate@epa.gov). Quality assurance program plans are available in each state office.

Data Quality: Reviews:

All data are reviewed and approved by the individual jurisdictions before input to the watershed model. QA/QC is also performed on the input data to ensure basic criteria, such as not applying a BMP at a higher level than allowed. A specific level of input should yield output within a specified range of values. Output is reviewed by both the CBPO staff and the Tributary Strategy Workgroup as an additional level of QA/QC. Any values out of the expected range is analyzed and understood before approval and public release. The model itself is given a quarterly peer review by an outside independent group of experts. There have been no data deficiencies identified in external reviews.

Data Limitations:

Data collected from voluntary collection programs are not included in the database, even though they may be valid and reliable. The only data submitted by state and local governments to the Chesapeake Bay Program Office are data that are required for reporting under the cost share and regulatory programs. State and local governments are aware that additional data collection efforts are being conducted by non-governmental organizations, however, they are done independently of the cost share programs and are not reported.

Error Estimate:

There may be errors of omission, misclassification, incorrect georeferencing, misdocumentation or mistakes in the processing of data.

New/Improved Data or Systems:

The next version of the watershed model is currently under development and will be completed in 2006. The new version (phase 5) will have increased spatial resolution and ability to model the effects of management practices. The phase 5 watershed model is a joint project with cooperating state and Federal agencies. Contact Gary Shenk gshenk@chesapeakebay.net or see the web site at http://www.chesapeakebay.net/phase5.htm

References:

See www.chesapeakebay.net/data/index.htm, refer to CBP Watershed Model Scenario Output Database, Phase 4.3. Contact Kate Hopkins at hopkins.kate@epa.gov or Jeff Sweeney jsweeney@chesapeakebay.net. The nutrient and sediment loads delivered to the Bay indicator are published at www.chesapeakebay.net/status.cfm?sid=186. The nutrient and sediment loads delivered to the Bay data files used in the indicator are located at www.chesapeakebay.net/pubs/statustrends/186-data-2003.xls.

See "Chesapeake Bay Watershed Model Application and Calculation of Nutrient and Sediment Loadings, Appendix H: Tracking Best Management Practice Nutrient Reductions in the Chesapeake Bay Program, A Report of the Chesapeake Bay Program Modeling Subcommittee", USEPA Chesapeake Bay Program Office, Annapolis, MD, August 1998, available at www.chesapeakebay.net/pubs/777.pdf

See USDA NRCS Field Office Technical Guide available at www.nrcs.usda.gov/technical/efotg/

FY 2005 PERFORMANCE MEASURE:

Reduce releases of nutrients throughout the Mississippi River Basin to reduce the size of the hypoxic zone in the Gulf of Mexico.

Performance results related to these measures are presented in Goal 4, page 141.

Performance Database:

(1) Louisiana Coastal Hypoxia Shelfwide Survey metadata (data housed at National Oceanic and Atmospheric Administration/National Ocean Data Center, Silver Spring, Maryland). Funds for this research are provided by the National Oceanic and Atmospheric Administration, Coastal Ocean Program (NOAA/COP); (2) Southeast Area Monitoring and Assessment Program (SEAMAP)—Gulf surveys. The data used in assessing performance under this measure have been collected annually on a calendar year basis since 1982.

Data Source:

(1) Hydrographic data are collected during annual surveys of the Louisiana continental shelf. Nutrient, pigment and station information data are also acquired. The physical, biological and chemical data collected are part of a long-term coastal Louisiana dataset. The goal is to understand physical and biological processes that contribute to the causes of hypoxia and use the data to support environmental models for use by resource managers; (2) The Southeast Area Monitoring and Assessment Program (SEAMAP) is a state/Federal/university program for collection, management and dissemination of fishery-independent data and information in the southeastern United States.

Methods, Assumptions and Suitability:

The distribution of hypoxia on the Louisiana shelf has been mapped annually in mid-summer (usually late July to early August) over a standard 60- to 80- station grid since 1985. During the shelfwide cruise, data are collected along transects from the mouth of the Mississippi River to the Texas border. Information is collected on a wide range of parameters, including conductivity/temperature/depth (CTD), light penetration, dissolved oxygen, suspended solids, nutrients, phytoplankton, and chlorophyll. Hydrographic, chemical, and biological data also are collected from two transects of Terrebonne Bay on a monthly basis, and bimonthly, off Atchafalaya Bay. There is a single moored instrument array in 20-m water depth in the core of the hypoxic zone that collects vertical conductivity/temperature data, as well as near-surface, mid, and near-bottom oxygen data; an upward directed Acoustic Doppler Current Profiler (ADCP) on the seabed measures direction and speed of currents from the seabed to the surface. There is also an assortment of nutrient and light meters.

Station depths on the cruises range from 3.25 to 52.4 meters. Northern end stations of transects are chosen based on the survey vessel's minimum depth limits for each longitude.

Standard data collections include hydrographic profiles for temperature, salinity, dissolved oxygen, and optical properties. Water samples for chlorophyll a and phaeopigments, nutrients, salinity, suspended sediment, and phytoplankton community composition are collected from the surface, near-bottom, and variable middle depths. The objective is to delimit and describe the area of midsummer bottom dissolved oxygen less than 2 (mg. L).

Details of data collection and methodology are provided in referenced reports.

QA/QC Procedures:

NOAA does not require written QA/QC procedures or a Quality Management Plan; however, the procedures related to data collection are covered in metadata files.

The SEAMAP Data Management System (DMS) conforms to the SEAMAP Gulf and South Atlantic DMS Requirements Document developed through a cooperative effort between National Marine Fisheries Service (NMFS) and other SEAMAP participants.

Data Quality Reviews:

(1) Essential components of the environmental monitoring program in the Gulf of Mexico include efforts to document the temporal and spatial extent of shelf hypoxia, and to collect basic hydrographic, chemical and biological data related to the development of hypoxia over seasonal cycles. All data collection protocols and data are presented to and reviewed by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force (the Task Force) in support of the adaptive management approach as outlined in the Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico (the Action Plan).

(2) Biological and environmental data from all SEAMAP-Gulf surveys are included in the SEAMAP Information System, managed in conjunction with National Marine Fisheries Service—Southeast Fisheries Science Center (NMFS-SEFSC). Raw data are edited by the collecting agency and verified by the SEAMAP Data Manager prior to entry into the system. Data from all SEAMAP-Gulf surveys during 1982-2003 have been entered into the system, and data from 2004 surveys are in the process of being verified, edited, and entered for storage and retrieval.

Data Limitations:

Monitoring for shelf-wide conditions is currently performed each year primarily, but not exclusively, in July. The spatial boundaries of some monitoring efforts are limited by resource availability. Experience with the datasets has shown that when data are plotted or used in further analysis, outlying values may occasionally be discovered.

Error Estimate:

(1) The manufacturers state +/- 0.2mg/L as the error allowance for both SeaBird and Hydrolab oxygen sensors.

References:

- Mississippi River/Gulf of Mexico Watershed Nutrient Task force.2001. Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico. Washington, DC.

- Rabalais N.N., R.E. Turner, Dubravko Justic, Quay Dortch, and W.J. Wiseman. 1999. Characterization of Hypoxia. Topic 1 Report for the Integrated assessment on Hypoxia in the Gulf of Mexico. NOAA Coastal Ocean Program Decision Analysis Series No. 15. Silver Spring Maryland: NationalOceanic and Atmospheric Administration.
- Hendee, J.C. 1994. Data management for the nutrient enhanced coastal ocean productivity program. Estuaries 17:900-3
- Rabalais, Nancy N., W.J. Wiseman Jr., R.E. Turner; Comparison of continuous records of near-bottom dissolved oxygen from the hypoxia zone of Louisiana. Estuaries 19:386-407
- SEAMAP Information System www.gsmfc.org/sis.html

Goal 4, Objective 4

FY 2005 PERFORMANCE MEASURES:

Provide high quality exposure, effects and assessment research results that support the August 2006 reassessment of current-use pesticide tolerances to EPA so that, by 2008, EPA will be able to characterize key factors influencing children's and other subpopulations' risks from pesticide exposure.

Information on managing mercury and other co-pollutants from utility boilers.

Methods and tools for measuring exposure and effects in children, and characterizing and reducing risks to children from environmental agents in schools.

Technical guidance for implementing and evaluating projects to restore riparian zones.

Baseline ecological condition of Western streams determined.

Complete 8 human health assessments and publish their results on the IRIS website.

Initiate or submit to external peer review human health assessments of 8 high priority chemicals.

Risk assessment toolbox to predict and reduce the consequences of chemical/biological attacks in U.S. cities.

Technical guidance for water system owners and operators on methods/strategies for minimizing damage from intentional introduction of biological/chemical contaminants.

Water system-related case studies that provide a spectrum of contingency planning situations and responses, including one specifically focused on the National Capital area.

Performance results related to these measures are presented in Goal 4, pages 142-148.

Performance Database:

Program output; no internal tracking system.

Goal 5, Objective 1

FY 2005 PERFORMANCE MEASURES:

Percentage of concluded enforcement cases requiring that pollutants be reduced, treated, or eliminated.

Pounds of pollution estimated to be reduced, treated, or eliminated as a result of concluded enforcement actions.

Percentage of concluded enforcement cases requiring implementation of improved environmental management practices.

Dollars invested in improved environmental performance or improved environmental management practices as a result of concluded enforcement actions (i.e., injunctive relief and SEPs).

Percentage of audits or other actions that result in the reduction, treatment, or elimination of pollutants and protection of populations or ecosystems.

Percentage of audits or other actions that result in improvements in environmental management practices.

Pounds of pollutants reduced, treated, or eliminated as a result of audits or other actions.

Dollars invested in improved environmental performance or improved environmental management practices as a result of audits or other actions.

Performance results related to these measures are presented in Goal 5, page 160.

Performance Databases:

The Integrated Compliance Information System, (ICIS), which tracks EPA civil enforcement (e.g., judicial and administrative) actions. The Criminal Case Reporting System (CCRS), the new enhanced database for tracking criminal enforcement actions, will be used in conjunction with ICIS to track the criminal enforcement recidivism measure.

Data Source:

Most of the essential data on environmental results in ICIS are collected through data developed originally through the use of the Case Conclusion Data Sheet (CCDS), which Agency staff begin preparing after the conclusion of each civil (judicial and administrative) enforcement action. EPA implemented the CCDS in 1996 to capture relevant information on the results and environmental benefits of concluded enforcement cases. The information generated through the CCDS is used to track progress for several of the performance measures. The CCDS form consists of 27 specific questions which, when completed, describe specifics of the case; the facility involved; information on how the case was concluded; the compliance actions required to be taken by the defendant(s); the costs involved; information on any Supplemental Environmental Project to be undertaken as part of the settlement; the amounts and types of any penalties assessed; and any costs recovered through the action, if applicable. The CCDS documents whether the facility/defendant, through injunctive relief, must: (1) reduce pollutants; and (2) improve management practices to curtail, eliminate or better monitor and handle pollutants in the future. The Criminal Enforcement Program also maintains a separate case conclusion data form and system for compiling and quantifying the results of criminal enforcement prosecution, including pollution reduction and the percentage of concluded criminal enforcement cases requiring improved environmental management practices. The revised criminal enforcement case conclusion form will be used beginning in FY06.

Methods, Assumptions and Suitability:

For enforcement actions which result in pollution reductions, the staff estimate the amounts of pollution reduced for an immediately implemented improvement, or an average year once a long-term solution is in place. There are established procedures for the staff to calculate, by statute, (e.g., Clean Water Act), the pollutant reductions or eliminations. The procedure first entails the determination of the difference between the current "out of compliance" concentration of the pollutant(s) and the post enforcement action "in compliance" concentration. This difference is then converted into standard units of measure.

QA/QC Procedures:

Quality Assurance/Quality Control procedures [See references] are in place for both the CCDS and ICIS entry. There are a Case Conclusion Data Sheet Training Booklet [See references] and a Case Conclusion Data Sheet Quick Guide [See references], both of which have been distributed throughout Regional and Headquarters' (HQ) offices. Separate CCDS Calculation and Completion Checklists [See references] are required to be filled out at the time the CCDS is completed. Criminal enforcement pollution reduction measures are quality assured by the program at the end of the fiscal year.

Quality Management Plans (QMPs) are prepared for each Office within The Office of Enforcement and Compliance Assurance (OECA). The Office of Compliance (OC) has established extensive processes for ensuring timely input, review and certification of ICIS information in Fiscal Year (FY) 2003. OC's QMP, effective for 5 years, was approved July 29, 2003 by the Office of Environmental Information (OEI) and is required to be re-approved in 2008. OECA instituted a requirement for semiannual executive certification of the overall accuracy of ICIS information to satisfy the Government Performance and Results Act (GPRA), the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement.

Data Quality Review:

Information contained in the CCDS and ICIS are required by policy to be reviewed by regional and headquarters' staff for completeness and accuracy. ICIS data is reviewed quarterly and reviewed and certified at mid-year and end-of-year.

Data Limitations:

The pollutant reductions or eliminations reported on the CCDS are estimates of what will be achieved if the defendant carries out the requirements of the settlement. Information on expected outcomes of state enforcement is not available. The estimates are based on information available at the time a case is settled or an order is issued. In some instances, this information will be developed and entered after the settlement, during continued discussions over specific plans for compliance. Because of the time it takes to agree on the compliance actions, there may be a delay in completing the CCDS. Additionally, because of unknowns at the time of settlement, different levels of technical proficiency, or the nature of a case, OECA's expectation is that based on information on the CCDS, the overall amounts of pollutant reductions/eliminations will be prudently underestimated.

New/Improved Data or Systems:

In November 2000, EPA completed a comprehensive guidance package on the preparation of the Case Conclusion Data Sheet. This guidance, issued to headquarters' and regional managers and staff, was made available in print and CD-ROM, and was supplemented in FY 2002 [See references]. The guidance contains work examples to ensure better calculation of the amounts of pollutants reduced or eliminated through concluded enforcement actions. EPA trained each of its ten regional offices during FY 2002. OC's Quality Management Plan was approved by OEI July 29, 2003, and is effective for 5 years. [See references]. A new criminal enforcement case management, tracking and reporting system (Criminal Case Reporting System) will come on line during the last quarter FY 2005 that will replace the existing criminal docket (CRIMDOC). This new system allows for a more user friendly database and greater tracking, management, and reporting capabilities.

References:

Quality Assurance and Quality Control procedures: Data Quality: Life Cycle Management Guidance, (IRM Policy Manual 2100, dated September 28, 1994, reference Chapter 17 for Life Cycle Management). Case Conclusion Data Sheets: Case Conclusion Data Sheet, Training Booklet, issued November 2000 available: www.epa.gov/compliance/resources/publications/planning/caseconc.pdf; Quick Guide for Case Conclusion Data Sheet, issued November 2000. Information Quality Strategy and OC's Quality Management Plans: Final Enforcement and Compliance Data Quality Strategy, and Description of FY 2002 Data Quality Strategy Implementation Plan Projects, signed March 25, 2002. ICIS: U.S. EPA, Office of Enforcement and Compliance Assurance, ICIS Phase I, implemented June 2002. Internal EPA database; non-enforcement sensitive data available to the public through the Freedom of Information Act (FOIA).

FY 2005 PERFORMANCE MEASURE:

Number of inspections, civil investigations, and criminal investigations conducted.

Performance results related to these measures are presented in Goal 5, page 160.

Performance Databases:

Output measure. Integrated Data for Enforcement Analysis (IDEA) integrates data from major enforcement and compliance systems, such as the Permit Compliance System (PCS), Air Facilities Subsystem (AFS), Resource Conservation and Recovery Act Information System (RCRAInfo), Integrated Compliance Information system (ICIS) for Clean Air Act (CAA) 112(r), National Compliance Database (NCDB), FIFRA/TSCA Tracking System (FTTS). There is also manual reporting of specific media inspections/evaluations and all civil investigations. The Criminal Case Reporting System (CCRS), which is scheduled to come on line during the last quarter of FY 2005, is a criminal case management, tracking and reporting system. Information about criminal cases investigated by the U.S. EPA-Criminal Investigation Division (CID) is entered into CCRS at case initiation, and investigation and prosecution information is tracked until case conclusion.

Data Source:

EPA's regional and Headquarters' offices and U.S. EPA-CID offices.

QA/QC Procedures:

All the systems have been developed in accordance with the Office of Information Management's Lifecycle Management Guidance, which includes data validation processes, internal screen audit checks and verification, system and user documents, data quality audit reports, third-party testing reports, and detailed report specifications for showing how data are calculated. For CRIMDOC (and the forthcoming CCRS) , the system administrator performs regularly scheduled quality assurance/quality control checks of the CRIMDOC database to validate data and to evaluate and recommend enhancements to the system.

Data Quality Review:

EPA is now using updated monitoring strategies [See references] which clarify reporting definitions and enhance oversight of state and local compliance monitoring programs. In FY2003, OECA instituted a requirement for semiannual executive certification of the overall accuracy of information to satisfy the GPRA, the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement.

Data Limitations:

For all systems, there are concerns about quality and completeness of data and the ability of existing systems to meet data needs. Incompatible database structures/designs and differences in data definitions impede integrated analyses. There is also a concern that the majority of EPA inspections/evaluations and all civil investigations are manually reported by the regions and cannot be verified. Additionally, there are incomplete data available on the universe of regulated facilities because not all are inspected/permitted. In addition, the targets for each measure such as the numbers of inspections, and civil investigations are based on the FTE and extramural resources from OECA and other program offices, i.e., OAR, OSWER, and OW, while targets for the number of criminal investigations are based upon resources allocated to the program in conjunction with program strategies and priorities.

New/Improved Data or Systems:

PCS modernization is underway and is scheduled for completion first quarter 2008. An Interim Data Exchange Format (IDEF) has been established and will support the transfer of data from modernized state systems into the current PCS data system while PCS is being modernized. EPA is addressing the quality of the data in the major systems and each Office within OECA has developed a Quality Management Plan (data quality objectives, quality assurance project plans, baseline

assessments). A new Integrated Compliance Information System (ICIS) supports core program needs and consolidates and streamlines existing systems. Additionally, OECA began implementing its Data Quality Strategy in FY 2002. A new case management, tracking and reporting system (Criminal Case Reporting System) is currently being developed that will replace CRIMDOC. This new system will be a more user-friendly database with greater tracking, management and reporting capabilities.

References:

Clean Air Act Compliance Monitoring Strategy, April 25, 2001, www.epa.gov/compliance/resources/policies/monitoring/cmspolicy.pdf

AFS: www.epa.gov/compliance/data/systems/air/afssystem.html

PCS: www.epa.gov/compliance/data/systems/water/pcssys.html.

RCRAinfo: www.epa.gov/epaoswer/hazwaste/data/index.htm.

For CRIMDOC: CRIM-DOC U.S. EPA, Office of Enforcement and Compliance Assurance. Internal enforcement confidential database; non-enforcement sensitive data available to the public through the Freedom of Information Act (FOIA).

Information Quality Strategy and OC's Quality Management Plans: Final Enforcement and Compliance Data Quality Strategy, and Description of FY 2002 Data Quality Strategy Implementation Plan Projects, signed March 25, 2002.

FY 2005 PERFORMANCE MEASURE:

Percentage of regulated entities taking complying actions as a result of on-site compliance inspections and evaluations.

Performance results related to these measures are presented in Goal 5, page 159.

Performance Databases:

ICIS and manual reporting by regions.

Data Sources:

EPA regional offices and Office of Civil Enforcement (specifically, the Clean Air Act (CAA)–Mobile Source program) and Office of Compliance—Agriculture Division.

Methods, Assumptions and Suitability:

A new measurement tool, the Inspection Conclusion Data Sheet, (ICDS) will be used to analyze results from inspections/evaluations conducted under some of EPA's major statutes. EPA will analyze data on the three pieces of information from the ICDS: on-site actions taken by facilities, deficiencies observed, and compliance assistance provided. The inspectors complete the Inspection Conclusion Data Sheet (ICDS) for each inspection or evaluation subject to ICDS reporting and the information is either entered into ICIS or reported manually by the Regions and HQ programs.

QA/QC Procedures:

ICIS has been developed per Office of Information Management Lifecycle Management Guidance, which includes data validation processes, internal screen audit checks and verification, system and user documents, data quality audit reports, third party testing reports, and detailed report specifications for showing how data are calculated.

Data Quality Review:

Regional manual reports are reviewed and checked against the inspection or evaluation data entered into other Agency databases (Air Facilities Subsystem (AFS), Permit Compliance System (PCS), Online Tracking Information System (OTIS), Integrated Data for Enforcement Analysis (IDEA)). Manual reports are also checked against ICIS if the Region entered the manual reported inspections/evaluations into that system. Information contained in the CCDS, ICDS and ICIS are required by policy to be reviewed by regional and headquarters' staff for completeness and accuracy. In FY2003, OECA instituted a requirement for semiannual executive certification of the overall accuracy of information to satisfy the GPRA, the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement. ICIS data are reviewed quarterly and certified at mid-year and end of year.

Data Limitations:

ICIS is currently the database of record for CAA 112(r) inspections and audits. It is not the official database of record for inspections and evaluations for other programs. Regions are encouraged to use ICIS specifically for ICDS reporting. This can result in redundant, incomplete, or contradictory data.

New/Improved Data or Systems:

The new Integrated Compliance Information System (ICIS) will support core program needs and consolidate and streamline existing systems. As ICIS becomes more widely used by the regions and HQ programs some of the problems with data entry and reporting should be resolved. As various older systems become modernized (e.g., PCS), they will incorporate the ICDS data set as part of the system. This should minimize data entry and reporting problems.

References:

ICIS: U.S. EPA, Office of Enforcement and Compliance Assurance, ICIS Phase I, implemented June 2002. Internal EPA database; non-enforcement sensitive data available to the public through the Freedom of Information Act (FOIA).

FY 2005 PERFORMANCE MEASURES:

Percentage of regulated entities seeking assistance from EPA-sponsored compliance assistance centers and clearinghouse reporting that they improved environmental management practices as a result of their use of the centers or the clearinghouse.

Percentage of regulated entities seeking assistance from EPA-sponsored compliance assistance centers and clearinghouse reporting that they reduced, treated, or eliminated pollution as a result of their use of the centers or the clearinghouse.

Percentage of regulated entities seeking assistance from EPA-sponsored compliance assistance centers and clearinghouse reporting that they increased their understanding of environmental requirements as a result of their use of the centers or the clearinghouse.

Performance results related to these measures are presented in Goal 5, page 159.

Performance Database:

EPA Headquarters manages data on the performance of the centers and clearinghouse respondents manually before entering it into ICIS.

Data source:

Headquarters will enter manually collected information into ICIS upon completion and delivery of media and sector-specific compliance assistance provided by the EPA-sponsored compliance assistance centers and the clearinghouse. ICIS is designed to capture outcome measurement information such as increased awareness/understanding of environmental laws, changes in behavior and environmental improvements as a result of the compliance assistance provided.

QA/QC Procedures:

Automated data checks and data entry guidelines are in place for ICIS. Data from manual systems will be validated with internal checks, third party testing reports, and detailed reports showing how data are calculated.

Data Quality Reviews:

Data from manual systems will be validated with internal checks, third party testing reports, and detailed reports showing how data are calculated.

Information contained in the ICIS is reviewed by Regional and Headquarters staff for completeness and accuracy. In FY2003, OECA instituted a requirement for semiannual executive certification of the overall accuracy of information to satisfy the GPRA, the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement. ICIS data are reviewed quarterly and reviewed and certified at mid-year and end of year.

New/Improved Data or Systems:

EPA plans to improve and/or modify elements of the compliance assistance module in ICIS based on use of the system.

References:

US EPA, Integrated Compliance Information System Compliance Assistance Module, February 2004; US EPA, Compliance Assistance in the Integrated Compliance Information System Guidance, February 20, 2004.

FY 2007 PERFORMANCE MEASURES:

Percentage of regulated entities receiving direct compliance assistance from EPA reporting that hey improved environmental management practices as a result of EPA assistance.

Percentage of regulated entities receiving direct compliance assistance from EPA reporting that they increased their understanding of environmental requirements as a result of EPA assistance.

Percentage of regulated entities receiving direct assistance from EPA reporting that they reduced, treated, or eliminated pollution, as a result of EPA assistance.

Performance results related to these measures are presented in Goal 5, page 160.

Performance Database:

EPA Headquarters will manage data on regulated entities receiving direct compliance assistance from EPA through ICIS.

Data source:

Headquarters and EPA's Regional offices will enter information in ICIS upon completion and delivery of media and sector-specific compliance assistance including workshops, training, on-site visits and distribution of compliance assistance tools.

ICIS is designed to capture outcome measurement information such as increased awareness/understanding of environmental laws, changes in behavior and environmental improvements as a result of the compliance assistance provided.

QA/QC Procedures:

Automated data checks and data entry guidelines are in place for ICIS.

Data Quality Review:

Information contained in the ICIS is reviewed by Regional and Headquarters staff for completeness and accuracy. In FY2003, OECA instituted a requirement for semiannual executive certification of the overall accuracy of information to satisfy the GPRA, the Agency's information quality guidelines, and other significant enforcement and compliance policies on performance measurement. ICIS data are reviewed quarterly and certified at mid-year and end of year.

New/Improved Data or Systems:

EPA plans to improve and/or modify elements of the compliance assistance module in ICIS based on use of the system.

References:

US EPA, Integrated Compliance Information System Compliance Assistance Module, February 2004; US EPA, Compliance Assistance in the Integrated Compliance Information System Guidance, February 20, 2004.

Goal 5, Objective 2

FY 2005 PERFORMANCE MEASURES:

- Reduction in overall pounds of pollution.
- Billions of BTUs of energy conserved.
- Annual cumulative quantity of water saved.
- Millions of dollars saved through reductions in pollution.
- Reduction in carbon dioxide (CO_2) emissions from a baseline year of 1996. (Green Chemistry only).

Performance results related to these measures are presented in Goal 5, page 163.

The Agency's Pollution Prevention programs include Green Chemistry, Design for the Environment, Green Engineering, and other Pollution Prevention (P2) Programs. Each of these programs operates under the principles of the Pollution Prevention Act and works with others to reduce waste at the source, before it is generated. These programs are designed to facilitate the incorporation of pollution prevention concepts and principles into the daily operations of government agencies, businesses, manufacturers, nonprofit organizations, and individuals.

Performance Database:

Green Chemistry (GC): EPA is developing an electronic database ("metrics" database) which will allow organized storage and retrieval of green chemistry data submitted to EPA on alternative feedstocks, processes, and safer chemicals. The database is being designed to store and retrieve, in a systematic fashion, information on the environmental benefits and, where available, economic benefits that these alternative green chemistry technologies offer. The database is also being designed to track the quantity of hazardous chemicals and solvents eliminated through implementation of these alternative technologies. Green Chemistry technology nominations are received up to December 31 of the year preceding the reporting year, and it normally takes 6-12 months to enter new technologies into the database. By the end of FY 2005, EPA expects to achieve its target of having a single instance of each unique nominated technology for 1996-2003 in the database.

Design for the Environment (DfE): DfE does not have a performance database. Instead, DfE is populating an evaluation spreadsheet for its programs (i.e., Alternatives to Lead Solder in Electronics, Furniture Flame Retardants Alternatives, the Formulator Program, and a collaboration with the Air Office on DfE approaches as implementation mechanisms for regulating Local Area Sources, such as Auto Refinishing). Spreadsheet content will vary by approach, and generally will include measures comparing baseline technologies or products to "cleaner" ones, as well as information on partner adoption and/or market share of cleaner alternatives; for example, the DfE formulator approach tracks chemical improvements (such as pounds of chemicals of concern no longer used by partners, and conversely pounds of safer ingredients) and resource savings. This information will allow benefit calculations. Information is collected on an ongoing basis.

Green Engineering (GE): Similar to the Green Chemistry Program, EPA will be developing an electronic database to keep track of environmental benefits of GE projects including, gallons of water, British Thermal Units (BTUs) and dollars saved and pounds of carbon dioxide (CO2) emissions eliminated

Pollution Prevention (P2) Programs: EPA has worked closely with state and local P2 programs to develop a national system that will provide data on environmental outcomes (the core P2 metrics included in the above performance measures). Many EPA Regional offices, state and local P2 programs are currently collecting data on P2 program activities, outputs, and outcomes. EPA has worked successfully with these programs to reach consensus on standardized metrics, including definitions, and to reach consensus on an ongoing system to gather data on these metrics. The core measures in the National Pollution Prevention Results System were adopted in April 2005. Over 25 state and state-level P2 organizations have signed Memoranda of Agreements to provide data using the metrics. The system will also benefit from new reporting requirements in EPA P2 grants. The new system has the cooperation of key stakeholder groups, such as the National Pollution Prevention Roundtable, which is currently adding data from years 2001-2003 to a January 2003 report providing baseline data for the period 1990. The new system also has the cooperation of the regional Pollution Prevention Resource Exchange (P2RX) centers. As the system is implemented, data collected from the program will be placed in a new national database, facilitating convenient data storage and retrieval.

Data Source:

Green Chemistry (GC): Industry and academia submit nominations annually to the Office of Pollution Prevention and Toxics (OPPT) in response to the Presidential Green Chemistry Challenge Awards.

Environmental and economic benefit information is included in the nomination packages. The metrics database pulls this benefit information from the nominations.

Design for the Environment (DfE): The source of DfE's evaluation information varies by the approach and the partner industry. For example, in DfE's formulation improvement partnerships, partners provide proprietary information on both their original formulation and their environmentally improved one. Partners sign a memorandum of understanding with EPA/DfE which includes information on how the company uses cleaner chemistry to formulate a product, the environmental and health benefits of the product, and customer and sales information. For other partnerships, data sources typically include technical studies (e.g., cleaner technology substitutes assessments, life-cycle assessments) and market/sales/adoption information from associations.

Green Engineering (GE): Data will come from profiles of recognized projects by technical journals or organizations, such as the American Institute of Chemical Engineers, or directly reported by project leaders on industry projects or joint academia-industry projects.

Pollution Prevention (P2) Programs: State and local P2 programs will submit data as described above.

Methods, Assumptions, and Suitability:

Green Chemistry (GC): The information will be tracked directly through internal record-keeping systems. No models or assumptions or statistical methods are employed.

Design for the Environment (DfE): Methods and assumptions vary by approach and partner industry. Each DfE partnership identifies and focuses on a unique set of chemicals and industrial processes. For most DfE approaches, the general method is to 1) develop a model for a "typical" or "average" facility, 2) assess the differences between traditional and alternative technologies on metrics such as toxics use, resource consumption, cost, and performance, 3) track market share of alternative technologies over time, and 4) multiply the increase in use of alternative, cleaner technologies by the environmental, cost, and performance differences identified in Step 2. Through this quantitative process, the Agency is able to calculate the benefits generated by the cleaner technology: e.g. how much toxics use reduction is occurring, how much less resources are consumed. Similarly, for DfE's formulation improvement approach, the method is to analyze environmental (e.g., toxics use, resource consumption) and cost differences between the old and improved formulations. Proprietary information, including sales data, is provided by our partners. For each approach, we will develop a spreadsheet that includes the methods and assumptions.

Green Engineering (GE): The information will be tracked directly through EPA record keeping systems. No models or statistical extrapolations are expected to be used.

Pollution Prevention (P2) Programs: The data will come from state and local P2 programs as described above. No models or assumptions or statistical methods are employed.

QA/QC Procedures:

All Pollution Prevention and Toxics programs operate under the Information Quality Guidelines as found at www.epa.gov/quality/informationguidelines/ and under the Pollution Prevention and Toxics Quality Management Plan (QMP). The Quality Management Plan is for internal use only.

Green Chemistry: Data undergo a technical screening review by the Agency before being uploaded to the database to determine if they adequately support the environmental benefits described in the application. Subsequent to Agency screening, data are reviewed by an external independent panel of technical experts from academia, industry, government, and nongovernmental organizations (NGOs). Their comments on potential benefits are incorporated into the database. The panel is convened by the Green Chemistry Institute of the American Chemical Society, primarily for judging nominations submitted to the Presidential Green Chemistry Challenge Awards Program and selecting winning technologies.

Design for the Environment (DfE): Data undergo a technical screening review by DfE before being uploaded to the spreadsheet. DfE determines whether data submitted adequately support the environmental benefits described.

Green Engineering (GE): Data collected will be reviewed to ensure it meets EPA's Quality Guidelines in terms of transparency, reasonableness and accuracy.

Pollution Prevention (P2) Programs: Data will undergo technical screening review by EPA and other program participants (e.g., National Pollution Prevention Roundtable) before being placed in the database. Additional QA/QC steps to be developed, as appropriate.

Data Quality Review:

All Office of Pollution Prevention and Toxics (OPPT) programs operate under EPA's Information Quality Guidelines as found at www.epa.gov/quality/informationguidelines/ and under the OPPT Quality Management Plan (QMP).

Green Chemistry (GC): Review of industry and academic data as documented in U.S. EPA, Office of Pollution Prevention and Toxics, Green Chemistry Program Files available at www.epa.gov/opptintr/greenchemistry/

Design for the Environment (DfE): Not applicable. Green Engineering (GE): Data collected will be reviewed to meet data quality requirements.

Pollution Prevention (P2) Programs: The new metrics and data system were based, in part, on recommendations in the February 2001 GAO report, "EPA Should Strengthen Its Efforts to Measure and Encourage Pollution Prevention" (GAO-01-283). They also incorporate work by such organizations as the Northeast Waste Management Officials Association, Pacific Northwest Pollution Prevention Resource Center, and National Pollution Prevention Roundtable.

Data Limitations:

Green Chemistry (GC): Occasionally data are not available for a given technology due to confidential business information (the Presidential Green Chemistry Challenge Awards Program does not process CBI). Because the Presidential Green Chemistry Challenge is a voluntary public program, it cannot routinely accept or process CBI. If the program stakeholders cannot verify a

technology because of proprietary information, especially during the final judging stage of the awards program, they can and do ask EPA to conduct the verification internally. EPA will then ask the company to share confidential information with CBI-cleared OPPT staff in order for EPA to conduct the verification. It also is occasionally unclear as to what is the percentage market penetration of implemented alternative green chemistry technology (potential benefits vs. realized benefits). In these cases, the database is so noted.

Design for the Environment (DfE): Occasionally, data on innovative chemistries or technologies are claimed CBI by the developing company, thus limiting the implementation of beneficial pollution prevention practices on a wider scale.

Green Engineering (GE): There may be instances in which environment benefits are not clearly quantified. In those instances, the data will be excluded.

Pollution Prevention (P2) Programs: Limitations arise from the reliance on individual state and local P2 programs to gather data. These programs vary in attention to data collection from sources within their jurisdictions, data verification and other QA/QC procedures. Also, despite plans described above to move toward consistent metrics and definitions, some differences exist. EPA is attempting to address these concerns by strengthening reporting requirements in its P2 grants (which fund much of the state and local P2 work) and focusing those requirements on outcomes, adding comprehensive new grant reporting forms and databases which are parallel with the National P2 Results System, and adding a P2 component to EPA Information Exchange Network (which provides financial support and a comprehensive data system to link state data with EPA).

Error Estimate:

Green Engineering (GE): There may be instances in which environmental benefits are not clearly quantified. In those instances, the data will be excluded. Not applicable for other programs contributing data to this measure.

New/Improved Data or Systems:

Green Chemistry (GC), Design for the Environment (DfE), Green Engineering (GE): The American Chemistry Council (ACC) has initiated an industry self-monitoring program called Responsible Care. Beginning in 2003, member companies will collect and report on a variety of information. Measures tentatively include Toxics Release Inventory (TRI) releases; tons of CO2 equivalent per pound of production; total BTUs consumed per pound of production; systems for assessing or, reassessing potential environmental, health, and safety risks; percentage of products re-evaluated; percentage of commitments for chemical evaluation programs; documentation of process for characterizing and managing product risks; and documentation of communication of risk characterization results. Many of these measures are similar to the EPA program targets identified under Goal 5, Objective 2. These reports may be an invaluable source of industry baseline information. It is important that the EPA programs identified under Goal 5 evaluate the utility of the reports generated under the ACC's Responsible Care Program in support of the EPA's programs as well as the goals of Responsible Care. (CAPRM II, Chemical and Pesticide Results Measures, March 2003 pp. 313). The Pollution Prevention (P2) program's data collection system is currently under development through a partnership with the National Pollution Prevention Roundtable and EPA.

References:

Chemical and Pesticide Results Measures II: www.pepps.fsu.edu./CAPRM/index.html

Green Chemistry (GC): www.epa.gov/opptintr/greenchemistry/

Design for the Environment (DfE): www.epa.gov/opptintr/dfe/

Green Engineering (GE): www.epa.gov/opptintr/greenengineering/

Pollution Prevention (P2) Programs: www.epa.gov/oppt/p2home/index.htm

www.p2.org/workgroup/Background.cfm

www.epa.gov/Networkg

FY 2005 PERFORMANCE MEASURES:

Percent reduction in Toxics Release Inventory (TRI) reported toxic chemical releases at Federal Facilities.

Percent reduction in Toxics Release Inventory (TRI) chemical releases to the environment from the business sector per unit of production ("Clean Index").

Percent reduction in TRI chemicals in production-related wastes generated by the business sector per unit of production ("Green Index").

Performance results related to these measures are presented in Goal 5, page 163.

Performance Database:

TRIM: Toxics Release Inventory Modernization, formerly TRIS (Toxics Release Inventory System) provides facility/chemical-specific data quantifying the amount of TRI-listed chemicals entering wastes associated with production process in each year. The total amount of each chemical in production-related wastes can be broken out by the methods employed in managing such wastes, including recycling, energy recovery, treatment, and disposal/release. Amounts of these wastes that are not recycled are tracked for these performance measures. The fourth performance measure uses the Chemical Abstract System (CAS) numbers for the 23 chemicals identified by EPA as priority chemicals (www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm).

Data Source:

Regulated facilities report facility-specific, chemical-specific release, waste and recycling data to EPA on a calendar year basis. For example, in calendar year 2003, 23,957 facilities filed 97,251 TRI reports. FY 2007 results will not be available until FY 2009 due to 2 year data lag.

Methods, Assumptions, and Suitability:

TRI data are collected as required by sections 313 of EPCRA and 6607 of Pollution Prevention Act (PPA) (40 CFR ' 372; www.epa.gov/tri/). Only certain facilities in specific Standard Industrial Classification (SIC) codes are required to report annually the quantities of over 650 listed toxic chemicals and chemical categories released to each environmental medium and otherwise managed as waste (40 CFR ' 372; www.epa.gov/tri/). Regulation requires covered facilities to use monitoring, mass balance, emission factors and/or engineering calculations approaches to estimate releases and recycling volumes. For the Clean and Green Index measures and priority list chemicals measure, data controls are employed to facilitate cross-year comparisons: a subset of chemicals and sectors are assessed that are consistently reported in all years; data are normalized to control for changes in production using published U.S. Bureau of Economic Analysis (BEA) gross product indices (chain-type quantity index for the manufacturing sector).

QA/QC Procedures:

Most facilities use EPA-certified automated Toxics Release Inventory (TRI) FORM R reporting tools, which contain automated error checking mechanisms. Upon receipt of the facilities' reports, EPA conducts automated edits, error checks, data scrubs, corrections and normalization during data entry and subsequent processing to verify that the information provided by the facilities is correctly entered in TRIM. The Agency does not control the quality of the data submitted by the regulated community. EPA does, however, work with the regulated community to improve the quality of their estimates.

Data Quality Review:

The quality of the data contained in the TRI chemical reports is dependent upon the quality of the data that the reporting facility uses to estimate its releases and other waste management quantities. Use of TRI Form R by submitters and EPA's performance data reviews combine to help assure data quality.

Data Limitations:

Use of the data should be based on the user's understanding that the Agency does not have direct assurance of the accuracy of the facilities' measurement and reporting processes. TRI release data are reported by facilities on a good faith, best-estimate basis. EPA does not have the resources to conduct on-site validation of each facility's reporting data, though on-site investigations do occur each year at a subset of reporting facilities.

Error Estimate:

From the various data quality efforts, EPA has learned of several reporting issues such as incorrect assignment of threshold activities and incorrect assignment of release and other waste management quantities (EPA-745-F-93-001; EPA-745-R-98-012; www.epa.gov/tri/tridata/data_quality_reports/index.htm; www.epa.gov/tri/report/index.htm.) For example, certain facilities incorrectly assigned a 'processing' (25,000 lb) threshold instead of an 'otherwise use' (10,000 lb) threshold for certain persistent, bioaccumulative and toxic (PBT) chemicals, so they did not have to report if their releases were below 25,000 lbs. Also, for example, some facilities incorrectly reported fugitive releases instead of stack releases of certain toxic chemicals.

New/Improved Data or Systems:

To improve reporting efficiency and effectiveness, reduce burden, and promote data reliability and consistency across Agency programs, EPA simplified the Toxics Release Inventory (TRI) reporting requirements. The TRI Form Modification Rule effective September of 2005, will simplify data elements, reduced the number of reporting codes, and make two technical corrections to the regulations by correcting contact information and removing an outdated description of a pollution prevention data element. The revised TRI form, will allow the EPA to better target pollution prevention efforts, improve public access to information about source reduction and pollution control activities undertaken by some facilities, and encourage manufacturers to comply by making it easier to use. Please see the following for additional information on this rule: www.epa.gov/tri/tridata/modrule/index.htm

References:

www.epa.gov/tri/ and additional citations provided above: EPA-745-F-93-001;EPA-745-R-98-012; www.epa.gov/tri/report/index.htm; www.epa.gov/tri/tridata/data_quality_reports/index.htm; OSWER priority chemicals and fact sheets www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm; www.epa.gov/tri/report/index.htm; Bureau of Economic Analysis (BEA) indices are available at www.bea.gov/bea/regional/gsp/

FY 2005 PERFORMANCE MEASURE:

Specific annual reductions in six media/resource areas: water use, energy use, materials use, solid waste generated, air releases, and water discharges.

Performance results related to these measures are presented in Goal 5, page 162.

Performance Databases:

Both the Performance Track On-Line (a Domino database) and the Performance Track Members Database (a Microsoft Access database) store information that facilities have provided to EPA in applications and annual performance reports. Performance Track members select a set of environmental indicators on which to report performance over a 3-year period of participation. The externally reported indicators (listed above) may or may not

be included in any particular facility's set of indicators. Performance Track aggregates and reports only that information that a facility voluntarily reports to the Agency. A facility may make progress towards one of the above indicators, but if it is not among its set of "commitments", then Performance Track's data will not reflect the changes occurring at the facility. Similarly, if a facility's performance declines in any of the above areas and the indicator is not included among its set of commitments, that decline will not be reflected in the above results.

Members report on results in a calendar year. Fiscal year 2005 corresponds most closely with members' calendar year of 2005. That data will be reported to the Performance Track program by April 1, 2006. The data will then be reviewed, aggregated, and available for external reporting in August 2006.

Data Source:

All data are self-reported and self-certified by member facilities. As described below, Performance Track engages in quality control to the extent possible, but it does not conduct formal auditing. However, a criterion of Performance Track membership is the existence of an environmental management system (EMS) at the facility, a key element of which is a system of measurement and monitoring. Most Performance Track facilities have had independent third-party audits of their EMSs, which create a basis for confidence in the facilities' data. It is clear from submitted reports that some facilities have a tendency to estimate or round data. Errors are also made in converting units and in calculations. In general, however, EPA is confident that the externally reported results are a fair representation of members' performance.

Methods, Assumptions, and Suitability:

Data collected from members' applications and annual performance reports are compiled and aggregated across those members that choose to report on the given indicator. The data reflect the performance results at the facility; any improvements or declines in performance are due to activities and conditions at the specific facility as a whole. However, in some cases, facilities report results for specific sections of a facility and this may not be clear in the reports submitted to the program. For example, Member A commits to reducing its VOCs from 1000 tons to 500 tons over a 3-year period. In Year 1, it reports a reduction of VOCs from 1000 tons to 800 tons. Performance Track aggregates this reduction of 200 tons with results from other facilities. But unbeknownst to Performance Track, the facility made a commitment to reduce its VOCs from Production Line A and is only reporting on its results from that production line. The facility is not intentionally hiding information from EPA, but mistakenly thought that its commitment could focus on environmental management activities at Production Line A rather than across the entire facility. Unfortunately, due to increased production and a couple of mishaps by a sloppy technician, VOC emissions at Production Line B increased by 500 tons in Year 1. Thus, the facility's VOC emissions actually increased by 300 tons in Year 1; Performance Track's statement to the public that the facility reduced its emissions by 200 tons is therefore misleading.

The data can be used to make year-to-year comparisons, but reviewers and analysts should bear in mind that Performance Track membership is constantly in flux. Although members should retain the same set of indicators for their 3-year participation period, as new members join the program and others leave, the baseline constantly changes.

Due to unavoidable issues regarding the timing of the application period, a small subset of reported data will represent 2 years of performance at certain facilities, i.e., the baseline will be 2 years prior rather than 1 year.

QA/QC Procedures:

Data submitted with applications and annual performance reports to the program are reviewed for completeness and adherence to program formatting requirements. In cases where it appears possible that data is miscalculated or misreported, EPA or contractor staff follows up with the facility. If the accuracy of data remains under question or if a facility has provided incomplete or nonstandard data, the database is coded to ensure that the data is excluded from aggregated and externally reported results.

Additionally, Performance Track staff visit up to 20% of Performance Track member facilities each year. During those visits, facilities are asked about their data collection systems and about the sources of the data reported to the program.

Performance Track contractors conduct a quality review of data entered manually into the database. Performance Track staff conduct periodic checks of the entered data. As described, Performance Track is quality controlled to the extent possible, but is not audited in a formal way. However, a prerequisite of Performance Track membership is an environmental management system (EMS) at the facility, a key element of which is a system of measurement and monitoring. Most Performance Track facilities have had independent third-party audits of their EMSs, which create a basis for confidence in the facilities' data. A Quality Management Plan is under development.

Data Limitations:

Potential sources of error include miscalculations, faulty data collection, misreporting, inconsistent reporting, and nonstandard reporting on the part of the facility. Where facilities submit data outside of the Performance Track On-Line system, Performance Track staff or contractors must enter data manually into the database. Manually entered data is sometimes typed incorrectly.

It is clear from submitted reports that some facilities have a tendency to estimate or round data. Errors are also made in converting units and in calculations. In general, however, EPA is confident that the externally reported results are a fair representation of members' performance.

New/Improved Performance Data or Systems:

Since spring 2004, all Performance Track applications and annual performance reports have been submitted electronically (i.e., through the Performance Track On-Line system), thus avoiding the need for manual data entry. Additionally, the program is implementing a new requirement that all members gain third-party assessments of their EMSs. Also, the program has reduced the chances that data may reflect

process-specific (rather than facility-wide) data by paying additional attention to the issue in the review process and by instituting "facility-wide data" requirements for all indicators.

References:

Members' applications and annual performance reports can be found on the Performance Track website at www.epa.gov/performancetrack/particip/alphabet.htm. *Performance Track On-Line and the Performance Track Members Database* are not generally accessible. Performance Track staff can grant access to and review of the databases by request.

Goal 5, Objective 3

FY 2005 PERFORMANCE MEASURES:

Measure 1: Increase tribes' ability to develop environmental program capacity by ensuring that federally recognized tribes have access to an environmental presence.

Measure 2: Develop or integrate EPA and interagency data systems to facilitate the use of EPA's Tribal Program Enterprise Architecture (TPEA) information in setting environmental priorities and informing policy decisions.

Measure 3: Eliminate data gaps for environmental conditions for major water, land, and air programs as determined through the availability of information in the TPEA.

Measure 4: Increase implementation of environmental programs in Indian country as determined by program delegations, approvals, or primacies issued to tribes and direct implementation activities by EPA [Associated PART Measure: Percent of tribes with delegated and non-delegated programs].

Measure 5: Increase the number of EPA-approved quality assurance plans for tribal environmental monitoring and assessment activities [Associated PART Measure: Percent of tribes with EPA-reviewed monitoring and assessment occurring].

Measure 6: Increase the percent of EPA agreements with tribes that reflect holistic (multimedia) program integration and traditional use of natural resources. [Associated PART Measure: Percent of tribes with EPA-approved multimedia work plans].

Measure 7 [Efficiency]: Number of environmental programs implemented in Indian country per million dollars.

Performance results related to these measures are presented in Goal 5, page 165.

Performance Database & Data Source:

EPA's American Indian Environmental Office (AIEO) developed an information technology infrastructure, named the Tribal Program Enterprise Architecture (TPEA. The TPEA is a suite of ten secure Internet-based applications that track environmental conditions and progress toward environmental program implementation in Indian country as well as other AIEO business functions. One TPEA application, the Objective 5.3 Reporting System, tracks progress in achieving the six Strategic Targets under Objective 5.3 of EPA's National Strategic Plan—"Build Tribal Capacity (associated with Measures 1-6). EPA employees use the Objective 5.3 Reporting System to establish program performance commitments for future fiscal years and to record actual program performance accomplishments for six Strategic Targets. Therefore, the Objective 5.3 Reporting System serves as the data source and performance database for each of the six Strategic Targets and their associated PART measures (associated PART measures represent program performance differently than the Strategic Targets but use the same data).

Measure 1: Increase tribes' ability to develop environmental program capacity by ensuring that federally recognized tribes have access to an environmental presence.

Access to an environmental presence is measured by the level of General Assistance Program (GAP) funds available to support tribes in hiring staff and acquiring resources to operate an environmental program. That level has changed over time. Presently, $110,000 is considered the average annual cost for a tribe to maintain an environmental presence.

The number of tribal entities that have access to an environmental presence is calculated from the annual GAP appropriation, less recisions and an annual set aside which supports nationally significant programs, divided by $110,000. That number is compared to the number of tribal entities eligible to receive GAP funding and reported as a percentage.

Values for appropriations and recisions are public records in the EPA annual budget. The GAP set aside values are maintained by AIEO. The $110,000 level to maintain an environmental presence was determined by consensus of the EPA Regional Indian Coordinators.

Measure 2: Develop or integrate EPA and interagency data systems to facilitate the use of EPA's Tribal Program Enterprise Architecture (TPEA) information in setting environmental priorities and informing policy decisions.

A Tribal Information Management System (TIMS) is the vehicle for organizing and integrating the various data sources used in the TPEA. Current TPEA data sources are existing federal databases, both from EPA and other agencies, supplemented by data collected from the EPA regions as appropriate. All data sources are identified and referenced in the application. EPA continues to take advantage of new technology to establish direct links with other federal agency data systems (including the U.S. Geological Survey, Bureau of Reclamation, and Indian Health Service) to further develop this integrated, comprehensive, multi-agency TPEA, following the business rules and models of the Federal Enterprise Architecture.

Presently, 45 data layers are identified in the Tribal Program Enterprise Architecture. Commitments for the incorporation of additional data sources are reported annually in the Objective 5.3 Reporting System.

Measure 3: Eliminate data gaps for environmental conditions for major water, land, and air programs as determined through the availability of information in the TPEA.

Identification of data gaps in environmental information is an issue both for EPA as an agency and other organizations that attempt to analyze data from a national perspective (Heinz Center, 2002). As EPA identifies environmental data gaps, AIEO will coordinate with other Agency programs to eliminate those gaps, with special emphasis on gaps in Indian country. Thirty data gaps are listed for measure 3. These were identified by a Baseline Assessment working group made up of EPA Headquarters and Regional staff responsible for management of tribal programs. Some obvious issues in Indian country—such as the prevalence of open dumps and hazardous waste sites—are not on the list of data gaps because national systems already exist to identify and verify that information (Indian Health Service Open Dumps Report to Congress, and EPA RCRAinfo data system). Measure 3 is measured as a percentage, which when applied to the total number of gaps equals the elimination of six data gaps by 2008. Commitments for the elimination of data gaps are reported annually in the Objective 5.3 Reporting System.

Measure 4: Increase implementation of environmental programs in Indian country as determined by program delegations, approvals, or primacies issued to tribes and direct implementation activities by EPA.

[Associated PART Measure: Percent of tribes with delegated and non-delegated programs]. Measure 4 is tracked by: 1) Treatment in a manner similar to a State (TAS) approvals or primacies; 2) the execution of Direct Implementation Tribal Cooperative Agreements (DITCA); and 3) GAP grants that have provisions for the implementation of solid waste or hazardous waste programs. EPA Regional project officers managing tribal grants use the Objective 5.3 Reporting System to input data by tribe and the system cumulates them nationally. Thus, it is possible, and even likely, that a tribe will contribute to a target in multiple ways. Measure 4 implementation activities are input continuously by regional tribal program liaisons and summed at the end of the fiscal year. The associated PART Measure is reported as a percent of tribes contributing to Measure 4.

Measure 5: Increase the number of EPA-approved quality assurance plans for tribal environmental monitoring and assessment activities.

[Associated PART Measure: Percent of tribes with EPA-reviewed monitoring and assessment occurring]. Measure 5 reports on active Quality Assurance Project Plans. Data are loaded into the Objective 5.3 Reporting System by regional tribal program liaisons from information maintained by regional Quality Assurance Officers. All ongoing environmental monitoring programs are required to have active Quality Assurance Project Plans. Measure 5 data are input continuously by regional tribal program liaisons and summed at the end of the fiscal year. The associated PART Measure is reported as a percent of tribes contributing to Measure 5.

Measure 6: Increase the number of EPA agreements with tribes that reflect holistic (multimedia) program integration and traditional use of natural resources [Associated PART Measure: Percent of tribes with EPA-approved multimedia work plans].

Measure 6 reports on Performance Partnership Grants (PPGs), Tier I, II, & III Tribal Environmental Agreements (TEAs), Memoranda of Agreement (MOAs), and Memoranda of Understanding (MOUs). These data are input by tribal program liaisons at the EPA regions and summed annually. As in Measure 4, it is possible, that a tribe will contribute to the measure in more than one way. Measure 6 TEAs, PPGs, MOAs and MOUs are loaded into the Objective 5.3 Reporting System by regional tribal program liaisons and summed at the end of the fiscal year. The associated PART Measure is reported as a percent of tribes contributing to Measure 6.

Measure 7 [Efficiency]: Number of environmental programs implemented in Indian country per million dollars.

Measure 7 is calculated annually by taking the number of tribes receiving GAP grants, the number of TAS approvals or primacies, the number of DITCAs, and number of GAP grants that have provisions for the implementation of solid waste or hazardous waste programs and dividing that cumulative number by the annual GAP appropriation (less recisions and annual set aside). The measure reflects the expansion of program implementation capacity and the establishment of specific environmental programs in relation to the level of resources contributed by the EPA program statutorily targeted towards those goals.

Methods, Assumptions and Suitability:

The Objective 5.3 Reporting System contains all the information for reporting Measures 1-6 (and their associated PART measures). Measures 4, 5, and 6 assume the regional tribal program liaisons input accurate data. Measure 4 and 7 can also be verified from Integrated Grants Management System records and the Objective 5.3 Reporting System. Measure 5 can be verified from Regional Quality Assurance Officer databases. Measure 6 can be verified from official

correspondence files between EPA Regions and Tribes, or from project officer case files.

QA/QC Procedures:

Data used in the Tribal Program Enterprise Architecture contains quality assurance and metadata documentation prepared by the originating agency or program. Additionally, because the information in the Tribal Program Enterprise Architecture will be used for budget and strategic planning purposes, AIEO requires adherence to the Office of the Chief Financial Officer's Information Quality Guidelines.

Data Quality Reviews:

Data correction and improvement is an ongoing component of the Tribal Program Enterprise Architecture. The Objective 5.3 Reporting System relies on multiple staff-level reviews and a number of limitations concerning the ability to analyze environmental conditions in Indian country specific to measures 2 and 3 have been identified. As a result, a special application, the Tribal Information Management System (TIMS) Data Center was developed. This Data Center supports the submission of corrections to boundary information, narrative profiles, and factual database information—particularly latitude and longitude coordinates for facilities. AIEO will collect and pass along recommendations regarding the correction or modification of databases whenever errors are detected or suggestions for database improvement are received. Each database manager will retain the responsibility of addressing the recommended change according to their quality assurance protocols. Because the data submittals will be used for budget or strategic planning purposes, AIEO will require that all submittals meet the OCFO's Information Quality Guidelines.

Data Limitations:

The largest part of the data used by the Tribal Program Enterprise Architecture has not been coded to particular tribes by the recording agency. AIEO uses new geographic data mining technologies to extract records based on the geographical coordinates of the data points. For example, if a regulated facility has latitude and longitude coordinates that place it in the boundaries of the Wind River Reservation, then it is assigned to the Arapaho and Shoshone Tribes of the Wind River Reservation. This technique is extremely powerful because it "tribally enables" large numbers of information systems which were previously incapable of identifying tribes. This approach will be applied to all EPA databases. There are limitations, however. When database records are not geographically identified with latitude and longitude, the technique does not work and the record is lost to the system. For EPA regulated facilities in the Facility Registry System, AIEO estimates that 64% have latitude and longitude recorded. Therefore, the accuracy of EPA's data concerning environmental conditions in Indian country will depend on additional improvements to Agency data systems.

Error Estimate:

Analysis of variation of reservation boundary coverages available to EPA indicates deviations of up to 5%. Another source of error is records that are not sufficiently described geographically to be assigned to specific tribes. For some agencies, such as the USGS, the geographic record is complete, so there is no error from these sources. It is estimated that 36% of the regulated facilities in EPA's regulatory databases are not geographically described. The TPEA identifies the non-geographically indexed facilities by postal zip code for zip codes that overlap tribal boundaries.

New/Improved Data or Systems:

The technologies used by the Tribal Program Enterprise Architecture are new, secure and state–of-the-art. The geographic interface is a product called ARC/IMS, which is a web-based application, with a fully functional Geographic Information System (GIS), scalable. The Tribal Program Enterprise Architecture uses XML protocols to attach to and display information seamlessly and in real-time from cooperating agency data systems without having to download the data to an intermediate server. In addition, the baseline assessment project has developed web-based, secure data input systems that allow regional project officers to input programmatic data directly into performance reporting systems, TIMS and other customizable reports.

References:

Office of Chief Financial Officer Information Quality Guidelines: www.epa.gov/quality/informationguidelines/.

Goal 5, Objective 4

FY 2005 PERFORMANCE MEASURES:

Verifications completed.

Testing Protocols completed.

Performance results related to these measures are presented in Goal 5, page 168.

Performance Database:

Program output; no internal tracking system.

Enabling and Support Programs

FY 2005 PERFORMANCE MEASURE:

Cumulative percentage reduction in energy consumption in EPA's 21 laboratories from the 1990 base.

Performance Database:

The Agency's contractor provides energy consumption information quarterly and annually. The Agency keeps the energy consumption data in the "Energy Reporting System." The contractor is responsible for validating the data.

Data Source:

The Agency's contractor collects quarterly energy data from each of EPA's laboratories. The data are based on metered readings from the laboratory's utility bills for certain utilities (natural gas, electricity, purchased steam, chilled water, high temperature hot water, and potable water) and from on-site consumption logs for other utilities (propane and fuel oil). The data from the on-site consumption logs are compared to invoices to verify that reported consumption and cost data are correct.

QA/QC Procedures:

EPA's Sustainable Facilities Practices Branch compares reported energy use at each facility against previous years' data to see if there are any significant and unexplainable increases or decreases in energy quantities and costs.

Data Limitations:

EPA does not have a formal meter verification program to ensure that an on-site utility meter reading corresponds to the charges included in the utility bill.

FY 2005 PERFORMANCE MEASURES:

The Central Data Exchange (CDX) will fully support electronic data exchange requirements for major EPA environmental systems, enabling faster receipt, processing, and quality checking of data.

States will be able to exchange data with CDX through state nodes in real time, using new web-based data standards that allow for automated data-quality checking.

States, tribes, laboratories, and others will choose to use CDX to report environmental data electronically to EPA, taking advantage of automated data quality checks and on-line customer support.

Customer-help desk calls resolved in a timely fashion.

Performance results related to these measures are presented in ESP, page 174.

Performance Database:

CDX Customer Registration Subsystem.

Data Source:

Data are provided by state, private sector, local, and tribal government CDX users.

Methods, Assumptions, and Suitability:

All CDX users must register before they can begin reporting to the system. The records of registration provide an up-to-date, accurate count of users. Users identify themselves with several descriptors.

QA/QC Procedures:

QA/QC have been performed in accordance with a **CDX Quality Assurance Plan** [*Quality Assurance Project Plan for the Interim Central Data Exchange System*. Document number: EP005T7. Sept. 17, 2001] and the **CDX Design Document v.3**, Appendix K registration procedures [*Central Data Exchange Electronic Reporting Prototype System Requirements:* Version 3; Document number: EP005S3. December 2000]. Specifically, data are reviewed for authenticity and integrity. The **CDX Quality Assurance Plan** was updated in FY 2004 [Quality Assurance Project Plan for the Central Data Exchange," 10/8/2004; contact: Wendy Timm, 202 566 0725] to incorporate new technology and policy requirements. Work is underway to complete the revision of the **Design Document.** Automated edit checking routines are performed in accordance with program specifications and CDX quality assurance guidance [*Quality Assurance Project Plan for the Interim Central Data Exchange System*. Document number: EP005T7. Sept. 17, 2001].

Data Quality Reviews:

CDX successfully completed independent security risk assessment in the summer 2001. In addition, routine audits of CDX data collection procedures and customer service operations are provided weekly to CDX management and staff for review. Included in these reports are performance measures such as the number of CDX new users, number of submissions to CDX, number of help desk calls, number of calls resolved, ranking of errors/problems, and actions taken. These reports are reviewed and actions discussed at weekly project meetings.

Data Limitations:

The CDX system collets, reports, and tracks performance measures on data quality and customer service. While its automated routines are sufficient to screen

systemic problems/issues, a more detailed assessment of data errors/problems generally requires a secondary level of analysis that takes time and human resources.

Error Estimate:

CDX incorporates a number of features to reduce errors, such as pre-populating data whenever possible, edit checks, etc. The possibility of an error in the number of states registered for CDX, e.g., double-counting of some sort, is extremely remote (far less than 1 %).

New/Improved Performance Data or Systems:

CDX coalesces the registration/submission requirements of many different state-to-EPA, private sector-to-EPA, and local and tribal governments-to-EPA data exchanges into a single web-based system. The system allows for a more consistent and comprehensive management and performance tracking of many different external customers. The creation of a centralized registration system, coupled with the use of web forms and web-based approaches to submitting the data, invite opportunities to introduce automated quality assurance procedures for the system and reduce human error.

References:

CDX website (www.epa.gov/cdx).

FY 2005 PERFORMANCE MEASURE:

Establish an improved suite of environmental indicators for use by EPA's programs and partners in the Agency's strategic planning and performance measurement process.

Performance results related to these measures are presented in ESP, page 174.

Performance Database:

Initial collection of indicators compiled during the drafting of EPA's "Report on the Environment," supplemented by indicators currently used in the Agency's strategic planning and performance measurement process (e.g., EPA's Strategic Plan, Annual Performance Plan, Annual Performance Report, Annual Operating Plan, and National Environmental Performance Partnership Agreements), will comprise an Agency baseline of indicators (www.epa.gov/indicators/roe/index.htm).

Methods, Assumptions and Suitability:

The Office of Environmental Information (OEI), the Office of Research and Development (ORD), and the Office of the Chief Financial Officer (OCFO) will review the planning documents and establish a baseline of indicators in consultation with key Agency steering committees.

QA/QC Procedures:

As the baseline is established, protocols also will be developed to ensure that the data supporting the indicators are accurate and complete.

Data Limitations:

The challenge is to develop suitable indicators with sufficient data of known quality.

New/Improved Performance Data or Systems:

The baseline indicators and supporting data are in development.

References:

EPA's "Draft Report on the Environment" and "Technical Support Document" (EPA pub. no. 260-R-02-006). Draft Report on the Environment Technical Document (Publication # EPA 600-R-03-050). Both Dated June 2003

Web site:

www.epa.gov/indicators/roe/html/roePDF.htm

FY 2005 PERFORMANCE MEASURE:

Percent compliance with criteria used by OMB to assess Agency security programs reported annually to OMB under the Federal Information Security Management Act (FISMA)/Government Information Security Act.

Performance results related to these measures are presented in ESP, page 175.

Performance Database:

Automated Security Self-Evaluation and Remediation Tracking (ASSERT) database.

Data Source:

Information technology (IT) system owners in Agency Program and Regional offices.

Methods, Assumptions, and Suitability:

Annual IT security assessments are conducted using the methodology mandated by the Office of Management and Budget (OMB), the National Institute of Standards, and Technology (NIST) Security Self-Assessment Guide for Information Technology Systems. ASSERT has automated and web-enabled this methodology.

QA/QC Procedures:

Automated edit checking routines are performed in accordance with ASSERT design specifications to ensure answers to questions in ASSERT are consistent. The Office of Inspector General consistent with §3545 FISMA, and the Chief Information Officer's information security staff conduct independent evaluations of the assessments. The Agency certifies results to OMB in the annual FISMA report.

Data Quality Reviews:

Program offices are required to develop security action plans composed of tasks

and milestones to address security weaknesses. Program offices self-report progress toward these milestones. EPA's information security staff review these self-reported data, conduct independent validation of a sample, and discuss anomalies with the submitting office.

Data Limitations:

Resources constrain the security staff's ability to validate all of the self-reported compliance data submitted by program systems' managers.

References:

Annual Information Security Reports to OMB:

OMB guidance memorandum: www.whitehouse.gov/omb/memoranda/2003.html; ASSERT web site: https://cfint.rtpnc.epa.gov/assert/; NIST Special Publication 800-26, *Security Self_Assessment Guide for Information Technology Systems*, November 2001: csrc.nist.gov/publications/nistpubs/index.html; and, Federal Information Security Management Act, PL107-347: csrc.nist.gov/policies/FISMA_final.pdf

FY 2005 PERFORMANCE MEASURE:

Number of actions taken for environmental improvement, reductions in environmental risks, and recommendations made for environmental improvement.

Number of actions taken for improvement in business practices, criminal/civil/administrative actions, potential dollar return, and recommendations made for improved business practices.

Performance results related to these measures are presented in ESP, page 175.

Performance Database:

The OIG Performance Measurement and Results System captures and aggregates information on an array of measures in a logic model format, linking immediate outputs with long-term intermediate outcomes and results. Because intermediate and long-term results may not be realized for several years, only verifiable results are reported in the year completed, while others remain prospective until completed and verified. Database measures include numbers of: 1) recommendations for environmental and management improvement; 2) legislative, regulatory policy, directive, or process changes; 3) environmental, program, and resource integrity risks identified, reduced, or eliminated; 4) best practices identified and transferred; 5) examples of environmental and management improvements; 6) monetary value of funds questioned, saved, fined, or recovered; and 7) public or congressional inquiries resolved.

Data Source:

Designated OIG staff enter data into the system. Data are from OIG performance evaluations, audits, research, court records, EPA documents, data systems, and reports that track environmental and management actions or improvements made and risks reduced or avoided. OIG also collects independent data from EPA's partners and stakeholders.

Methods, Assumptions, and Suitability:

OIG performance results are a chain of linked events, starting with OIG outputs (e.g., recommendations, reports of best practices, and identification of risks). The subsequent actions taken by EPA or its stakeholders/partners, as a result of OIG's outputs, to improve operational efficiency and environmental program delivery are reported as intermediate outcomes. The resulting improvements in operational efficiency, risks reduced/eliminated, and conditions of environmental and human health are reported as outcomes. By using common categories of performance measures, quantitative results can be summed and reported. Each outcome is also qualitatively described, supported, and linked to an OIG product or output. The OIG can only control its outputs, and has no authority, beyond its influence, to implement its recommendations that lead to environmental and management outcomes.

QA/QC Procedures:

All performance data submitted to the database require at least one verifiable source assuring data accuracy and reliability. Data quality assurance and control are performed as an extension of OIG products and services, subject to rigorous compliance with the Government Auditing Standards of the Comptroller General[15], and regularly reviewed by OIG management, an independent OIG Management Assessment Review Team, and external independent peer reviews.

Data Quality Reviews:

There have not been any previous audit findings or reports by external groups on data or database weaknesses in the OIG Performance Measurement and Results System. All data reported are audited internally for accuracy and consistency.

Data Limitations:

All OIG staff are responsible for data accuracy in their products and services. However, there is a possibility of incomplete, miscoded, or missing data in the system due to human error or time lags. Data supporting achievement of results are often from indirect or external sources, with their own methods or standards for data verification/validation.

Error Estimate:

The error rate for outputs is estimated at +/-2%, while the error rate for reported long-term outcomes is presumably greater because of the longer period needed for tracking results. Errors tend to be those of omission.

New/Improved Data or Systems:

The OIG developed the Performance Measurement and Results System as a prototype in FY 2001 and anticipates replacing it in FY 2006 with a more sophisticated

system designed to integrate data collection and analysis. We also expect the quality of the data to improve as staff gain greater familiarity with the system and measures. This system is a best practice in government for linking an array of measures from outputs to eventual results and impacts. With enhanced linkages to customer satisfaction results and resource investments, it will provide a full-balanced scorecard with return on investment information for accountability and decision making.

References:

All OIG non-restricted performance results are referenced in the OIG Performance Measurement and Results System with supporting documentation available either through the OIG Web Site or other Agency databases. The OIG Web Site is www.epa.gov/oig.

FY 2005 PERFORMANCE MEASURE:

Agency's audited Financial Statements are timely and receive an unqualified opinion.

Performance results related to these measures are presented in ESP, page 178.

Performance Database:

Output measure. There is no performance database.

Data Source:

OMB acknowledgement of receipt of financial statements; OIG audit report.

QA/QC Procedures:

The Agency's financial statements are subject to OCFO management review and an OIG audit.

Data Quality Review:

The annual financial audit opinion, rendered by the OIG, is a gauge of the accuracy and fair presentation of the financial activity and financial balances of the Agency. The unqualified opinion is rendered by the OIG.

References:

Fiscal Year 2004 EPA Annual Report.

NOTES

1 For FY 2007, the Agency will be reporting on a measure which combines the current APGs 2.4 and 2.5. It measures the percent of community water systems in compliance with all drinking water standards. This measure arose from the Drinking Water State Revolving Fund PART.

2 Data Reliability Action Plan. U.S. EPA, October 2002. Office of Ground Water and Drinking Water internal work plan document. Drinking Water Data Reliability Analysis and Action Plan (2003) For State Reported Public Water System Data In the EPA Safe Drinking Water Information System/Federal Version (SDWIS/FED)

3 U.S. EPA, Office of Water, Office of Ground Water and Drinking Water Information Strategy (under revision). See Options for OGWDW Information Strategy (Working Draft), EPA 816-P-01-001. Washington, DC, February 2001. Available on the Internet at www.epa.gov/safewater/data/informationstrategy.html

4 SDWIS/STATE (Version 8.1) is an optional Oracle data base application available for use by states and EPA regions to support implementation of their drinking water programs. U.S. EPA, Office of Ground Water and Drinking Water. Data and Databases. Drinking Water Data & Databases—SDWIS/STATE, July 2002. Information available on the Internet: www.epa.gov/safewater/sdwis_st/current.html

5 These are internal documents maintained by EPA's Office of Ground Water and Drinking Water. Please call 202-564-3751 for further information.

6 Safe Drinking Water Act Amendments of 1996. P.L. 104-182. (Washington: 6 August 1996). Available on the Internet at www.epa.gov/safewater/sdwa/sdwa.html.

7 U.S. EPA, Office of Water. State Source Water Assessment and Protection Programs Guidance. EPA 816-R-97-009 (Washington: US EPA, August 1997). Available on the Internet at www.epa.gov/safewater/swp/swappg.html.

8 Watershed Assessment, Tracking & Environmental Results (WATERS). Available only on the Internet at www.epa.gov/waters/

9 Safe Drinking Water Information System (SDWIS). Information available on the Internet at www.epa.gov/safewater/databases.html

10 Report of the Federal Advisory Committee on the Total Maximum Daily Load Program. 1998. National Advisory Council for Environmental Policy and Technology. EPA Number 100R98006. National Center for Environmental Publications]

11 Water Quality: Key EPA and State Decisions Limited by Inconsistent and Incomplete Data. March 15,2000. RCED-00-54 and Water Quality: Inconsistent State Approaches Complicate Nation's Efforts to Identify Its Most Polluted Waters. January 11, 2002

12 Assessing the TMDL Approach to Water Quality Management. 2001. Committee to Assess the Scientific Basis of the Total Maximum Daily Load Approach to Water Pollution Reduction, Water Science and Technology Board, National Research Council

13 US EPA. Draft Report on the Environment 2003. July 2003. EPA 260-R-02-006. Available at www.epa.gov/indicators/roe/index.htm.

14 U.S. EPA. (July 31, 2002). Consolidated Assessment and Listing Methodology. Toward a Compendium of Best Practices. (First Edition). Washington, DC: Office of Wetlands, Oceans, and Watersheds. Available on the Internet: Monitoring and Assessing Water Quality www.epa.gov/owow/monitoring/calm.html.

15 Dahl, T.E. 2000. Status and trends of wetlands in the conterminous United States 1986 to 1997. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 82pp.