



Highlights of Results of the 303(d) & Registration Review Pilot EPA/Office of Pesticide Programs November 2, 2006

Introduction. In February 2006, a memo from Debra Edwards (OPP/SRRD/DD) and Benita Best-Wong (OWOW/AWPD/DD) to EPA regional water and pesticide division directors described a pilot project designed to obtain and consider state 303(d) listing data, and other related and relevant information for other water bodies of state concern, for use in the pesticide registration review program.

OPP requested detailed data that supported the state's 303(d) listing, associated meta data, and any additional monitoring data for these pesticides in non-listed water bodies that the states felt was relevant to be sent to OPP. This information was requested to gain experience with how this type of data could be gathered efficiently for other pesticides, the extent to which the data could be used in pesticide reviews, and the roles of water and pesticides staffs in EPA headquarters, regions and states in collecting and using these data.

This report presents highlights of the pilot project results. The outcome of the pilot has informed the development of a draft standard operating procedure for voluntary submission of water quality in the early stages of pesticide registration review.

Background. OPP indicated its interest in obtaining "all available data supporting 303(d) listings, as well as any other malathion or chlorpyrifos monitoring data for a specific water body of concern to a State." These two pesticides were selected to involve multiple regions and states. Four regions and seven States participated in the pilot. Pilot program participants recognized that the listings for these pesticides had occurred over time and that 303(d) listing criteria and methodologies have also been changing over time. In addition, a finding that data provided cannot be used directly in OPP risk assessments does not question the basis for the 303(d) listing, since 303(d) listing criteria differ from OPP risk assessment requirements.

OPP coordinated the data collection effort with Regions, and Regions worked with the involved States. All participants were limited in the time that could be devoted to the pilot project. Additional data may be available within the States for these pesticides.

OPP reviewers accessed all documents and Internet sites provided by States to determine data accessibility and metadata parameters, with the following questions in mind. These questions relate to OPP's ability to use the data provided in pesticide exposure assessments:

- In what format were the data provided?
- How easy was it to access data for a specific chemical? .

- How easy was it to correlate the data provided with the specific 303(d) listing?
- Are fundamental data provided such that they can be referenced and used in an OPP exposure assessment?
- Was a summary report provided describing study design and analytical results?
- Was adequate metadata provided for interpretation?
- Was a summary report provided with a characterization of exposure using metadata (e.g., known information on pesticide usage)?

OPP found that many of the submissions lacked data elements that are needed to use the data quantitatively in pesticide exposure assessments. However, where references were provided the data could be described qualitatively.

OPP was not able to determine readily for a majority of the data what specific 303(d) listing was supported by the data.

In some cases, underlying data were not accessible. When data were accessible, submissions often lacked one or more of the following elements that would aid use in pesticide risk assessments: bibliographic citations, location information, sample types, concentrations, date/time, duration, analytical method). For example, in some cases location information was provided but not concentrations.

Summary reports describing the monitoring study design, results or metadata often did not exist, which is not unusual for earlier monitoring data.

Chemical-specific data often could not be queried and extracted, or it took some effort to read through all the information provided to locate potentially useful data sources.

Four States provided one or more data submissions that could be used qualitatively and possibly quantitatively in OPP exposure assessments.

For example, one State submitted three Internet addresses for sites that provided information on the monitoring program design and annual data reports.

- Full bibliographic citations were provided (annual reports and raw data for five years).
- Location information was provided as well as sampling types, dates, concentrations, analytical method, detection limits).
- A summary report describing the monitoring study design and results was provided.
- Metadata were provided, including: pesticide usage, land use associated with sampling locations.

Therefore based on the information provided it appears these data are useful for exposure characterization, at least qualitatively and possibly quantitatively.

In other submissions, metadata were provided in some reports but not others regarding chemical use and land use in the study area, so that additional work would have to be done to use these data for exposure characterization

Conclusions

A limited set of state water quality data associated with two pesticides was gathered for this pilot. The data submitted had been developed by states over time and was of varying utility for use in pesticide risk assessments. All participants were limited in the time that could be devoted to the pilot project.

Among the pilot submissions, there were several that included data of high quality, meeting most of the data elements identified in Appendix A. If data such as these were received in the docket for registration review on a specific chemical, they would be useful to OPP in its exposure assessment and characterization when assessing ecological risk for that chemical.

Several other submissions had potential to be useful to OPP if some of the missing elements could be provided. More work would be required to determine how to use the data in an exposure assessment.

Some of the data was provided through Internet links. This minimized regional and state resources, but often resulted in time consuming searches and follow up inquiries by OPP scientists to determine if the right data were accessed (i.e. how the data relate to 303(d) listings). State water quality data links provided for Registration Review should link directly to data sets with clear descriptions, as outlined in Appendix A.

OPP expects that more recently collected data will conform more closely to the standards needed for use in risk assessments. Data that conform to many or all of the criteria in Appendix A can be used in quantitative risk assessments.

An outcome of the pilot has been the development of a revised draft standard operating procedure (SOP) for voluntary submission of state and tribal water quality data during registration review.

OPP encourages states and tribes to submit water quality data in advance of or in response to Registration Review docket openings. Providing this information in advance of docket openings would allow the data to be cited in the docket, providing it can be easily accessed by OPP and the public. Providing the information later, in response to a docket opening, would still make the data available to OPP in time for consideration as OPP decides whether new data and/or updated risk assessments are needed.

Appendix A: Options for Providing Data or Data Locations to EPA/OPP

There are several options for providing the data or data locations to EPA/OPP:

1. If the data are already in the new STORET database, then simply let OPP know where the dataset is located within the database.
2. If the data are in legacy versions of STORET, or in other data systems, then OPP would like to get the type of metadata and detailed data described in the following sections.

(n.b., As a point of reference, *The National Water Quality Monitoring Council*, a consortium of federal, tribal, state and local agencies, academia, and the private and public sector water supply industries, developed guidance on water quality data elements that enhance the evaluation and sharing of water quality data. The data elements identified below were derived from this guidance (http://acwi.gov/methods/data_projects/index.html, accessed 10/2/2006). In addition, detailed guidance on elements included in data quality standards may be found in the *Environmental Sampling, Analysis and Results (ESAR)* Data Standard issued by the Environmental Data Standards Council: <http://www.envdatastandards.net/content/article/detail/649?PHPSESSID=f4d35d5d72960a91284c065c6ed71f9a>)

Sample data must include at a minimum:

- Bibliographic reference
Data included in an EPA risk assessment need to be citable. The reference would ideally be for a report on the study in which the data were collected. If the bibliographic citation is a website, it should reference the page containing the data in question (not the general site for the database), and must identify the date the page was accessed. A database that is on the web containing data from multiple studies is acceptable, as long as a lead contact (i.e. study director or collecting organization) for the study that collected the specific data in question is provided.
- Sample collection date (and time, if available)
- Sample ID
- Location description (Water body name in National Hydrography Dataset, and location descriptor such as: latitude/longitude, FIPS code, water body & segment)
- Sample media (e.g. water, filtered water, bed sediment, tissue, etc.)
- Concentration detected and measurement units

Other important information that aid in interpreting monitoring data are:

- What was the purpose of the study (i.e. study design rationale)? (a reconnaissance study, targeted to compounds of interest, TMDL plan, statistically designed)
- Analytical method
- Detection limit
- QA/QC for method & samples
- Time of sample (e.g. date, time, and duration (if a composite), or other relevant parameter (such as a flow weighted sample))
- Sample collection method (e.g. grab or composite)
- Toxicity benchmark, if available (e.g. state water quality criterion)

Metadata (ancillary data) are needed when using the data quantitatively, such as

- Land use, including cropping pattern, agriculture/urban, etc.
- Pesticide usage that could affect water quality at sampling location
- Did the sampling methodology & analytical methods go through a formal QA process
- Is the formal QA process documented (e.g. in a report or on a website address)
- For pesticides that adsorb to sediments: percent organic carbon, bulk density, etc.
- Relevant organism parameters (size or life stage)
- For some chemicals, environmental conditions may affect mobility and persistence (for example: temperature, pH, hardness, turbidity). If this is known to occur, information on the parameter would be helpful in interpreting the data.

OPP recognizes that raw data for all the parameters listed above may not be available in all monitoring studies, particularly for older studies, and that the types of water quality data collected might be different between monitoring programs. There is no need for states to create or reformat any data – OPP will attempt to use what is available, either qualitatively or quantitatively. In that spirit:

If the supporting data were collected in a monitoring program conducted by the states themselves, OPP would like to receive the detailed monitoring data and a copy of any report describing the purpose and design of the monitoring study, or internet web address leading to this information.

If the data were collected by an outside party, such as university researchers, then citations of published reports or copies of the reports themselves would provide the needed context. (Note, please do not submit NAWQA data if it was used as the basis of a 303(d) listing or identification of a water body of concern, instead please reference the specific NAWQA dataset.)

If any 303(d) listings or other water quality concerns for pesticides were based on watershed characteristics or expected pesticide use, and not actual pesticide detections in surface water, such information could help inform OPP's risk assessment, as well.

In summary, OPP is interested in seeing all available data for a specific water body of concern to a State. If a monitoring study is already contained within the new STORET all that is required is its location within the database. For monitoring studies not contained with the new STORET, please submit data, or provide database locations, with associated documentation or references, as described above.