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Subject: Secondary Environmental and Energy Impacts for Existing HMIWI  
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## I. Background

The U.S. Environmental Protection Agency (EPA), under sections 111 and 129 of the Clean Air Act (CAA), is required to regulate emissions of nine pollutants from hospital/medical/infectious waste incinerators (HMIWI): hydrogen chloride (HCl), carbon monoxide (CO), lead (Pb), cadmium (Cd), mercury (Hg), particulate matter (PM), dioxins/furans (CDD/CDF), nitrogen oxides (NO<sub>x</sub>), and sulfur dioxide (SO<sub>2</sub>). To respond to concerns raised by the U.S. Court of Appeals for the D.C. Circuit regarding the methodology originally used to develop the regulation, EPA is re-developing the HMIWI standards. The EPA has developed a series of maximum achievable control technology (MACT) floor and beyond-the-floor (BTF) options to support that re-development. These options are discussed further in separate memoranda.<sup>1,2</sup> Emission control technologies and other control measures that can be used to comply with these options include wet scrubbers, fabric filters, dry scrubbers, HMIWI secondary chamber retrofits, selective noncatalytic reduction (SNCR), activated carbon injection (ACI), and various other control measures designed to obtain incremental emission reductions. The purpose of this memorandum is to determine the secondary environmental and energy impacts that would result from existing sources using these various emission controls to comply, as well as using alternatives to compliance, specifically autoclaving and then landfilling the waste.

## II. Model Impacts

The secondary environmental and energy impacts associated with bringing HMIWI into compliance include solid waste impacts, wastewater impacts, energy impacts, and secondary emissions. Solid waste impacts and wastewater impacts are the discarded solids and sewage generated by the emission controls. Energy impacts comprise the electricity and steam required to operate the emission controls, and secondary emissions include the criteria pollutant emissions (PM, CO, NO<sub>x</sub>, SO<sub>2</sub>) from utilities that generate the electricity.

Secondary environmental and energy impacts have been estimated for a series of model existing HMIWI—large, medium, small non-rural, and small rural units. Table 1 shows the basis

for the development of the parameters for these model HMIWI (e.g., incinerator charge rate, stack gas flow rate, incinerator operating hours, and concentrations) were developed. Table 2 presents a summary of the model impacts for each emission control. The following sections discuss how the model impacts were estimated for each emission control and present the range of model impacts.

#### A. Packed-Bed Wet Scrubbers

Packed-bed wet scrubbers are especially effective at reducing emissions of acid gases such as HCl, and also provide limited control of PM, metals, and SO<sub>2</sub> (if present at high enough concentrations). These wet scrubbers can be installed either alone or after a dry scrubber or fabric filter. Impacts are presented for each model HMIWI in Table 3.

The wastewater impacts associated with using a packed-bed wet scrubber were estimated (as shown in the following equation) by calculating the amount of sewage disposal for a packed-bed wet scrubber, in gallons per year (gpy):

Wastewater impacts (gpy) = blowdown rate (gallons per minute [gpm]) x 60 minutes per hour (min/hr) x operating hours per year (hr/yr)

The sewage disposal calculation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI and a memo update.<sup>3,4</sup> The equation for blowdown rate is presented in Table 3. As shown in Table 3, the wastewater impacts associated with using a packed-bed scrubber range from 47 to 6,533 gpy.

The energy impacts associated with using a packed-bed wet scrubber were estimated (as shown in the following equation) by calculating the amount of electricity needed to operate the wet scrubber and converting that amount to million British thermal units per year (MM Btu/yr).

Energy impacts (MM Btu/yr) = [0.000181 x gas flow rate (actual cubic feet per minute [acfm]) x pressure drop (assumed 15 inches of water [in. H<sub>2</sub>O]) + 0.000289 x water circulation rate (gpm) x water head (assumed 60 feet of H<sub>2</sub>O)] x operating hours per year (hr/yr) x 1 Btu/0.000292875 kilowatt-hour (kWh) x 1 MM Btu/10<sup>6</sup> Btu

The electricity calculation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI and a memo update.<sup>3,4</sup> The equations for actual gas flow rate and water circulation are presented in Table 3. As shown in Table 3, the energy impacts associated with using a packed-bed wet scrubber range from 12 to 287 MM Btu/yr.

The secondary emissions were estimated, in pounds per year (lb/yr), by multiplying the energy impacts by emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for electricity production based on the projected generation mix for the year 2015.<sup>5</sup> The PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> emission factors were derived from new source performance standards (NSPS), AP-42 emission factors, and Clean Air Markets emission factors. The 2015 projection from the latest version of EPA's Integrated Planning Model (IPM Version 3.0) was chosen because it is closest to the 2014 compliance date for existing sources for the revised HMIWI requirements. The projected mix is as follows: 53 percent coal, 21 percent oil and natural gas, 17 percent nuclear, 6 percent hydroelectric, 2 percent renewable, and 1 percent other.<sup>5</sup> No secondary air impacts were attributed to nuclear,

hydroelectric, or renewable energy generation. The secondary air impacts for “other” were assumed to be equivalent to those for natural gas.

The NO<sub>x</sub> and SO<sub>2</sub> emission factors were adjusted to account for expected reductions in NO<sub>x</sub> and SO<sub>2</sub> emissions by 2015, based on Clean Air Interstate Rule (CAIR) requirements—i.e., 61 percent NO<sub>x</sub> reduction (for solid and liquid/gas fuels) and 70 percent SO<sub>2</sub> reduction (for solid fuels). Although CAIR has been vacated by the U.S. Court of Appeals for the D.C. Circuit, NO<sub>x</sub> and SO<sub>2</sub> emission reductions similar to CAIR were assumed for 2015. The secondary emissions were estimated as follows:

Secondary PM emissions (lb/yr) = energy impacts (MM Btu/yr) x [NSPS limit for coal-fired utility boilers (0.03 lb PM/MM Btu) x 53% electricity generation using coal + AP-42 emission factor for oil/gas-fired turbines (1.9 lb PM/MM cubic feet [ft<sup>3</sup>]) / 1,020 MM Btu/MM ft<sup>3</sup> of natural gas x 22% electricity generation using oil/natural gas or “other”]<sup>6,7</sup>

Secondary CO emissions (lb/yr) = energy impacts (MM Btu/yr) x [AP-42 emission factor for coal-fired utility boilers (5 lb CO/ton bituminous coal) / 26 MM Btu/ton bituminous coal x 53% electricity generation using coal + AP-42 emission factor for natural gas (84 lb CO/MM ft<sup>3</sup>) / 1,020 MM Btu/MM ft<sup>3</sup> of natural gas x 22% electricity generation using oil/natural gas or “other”]<sup>7,8</sup>

Secondary NO<sub>x</sub> emissions (lb/yr) = energy impacts (MM Btu/yr) x [Clean Air Markets emission factor for coal-fired utility boilers (0.25 lb NO<sub>x</sub>/MM Btu) x (100% - 61%) + AP-42 emission factor for oil/gas-fired turbines (100 lb NO<sub>x</sub>/MM ft<sup>3</sup>) / 1,020 MM Btu/MM ft<sup>3</sup> natural gas x (100% - 61%) x 22% electricity generation using oil/natural gas or “other”]<sup>7,9,10</sup>

Secondary SO<sub>2</sub> emissions (lb/yr) = energy impacts (MM Btu/yr) x [Clean Air Markets emission factor for coal-fired utility boilers (0.737 lb SO<sub>2</sub>/MM Btu) x (100% - 70%) + AP-42 emission factor for oil/gas-fired turbines (0.6 lb SO<sub>2</sub>/MM ft<sup>3</sup>) / 1,020 MM Btu/MM ft<sup>3</sup> natural gas x 22% electricity generation using oil/natural gas or “other”]<sup>7,9,10</sup>

As shown in Table 3, the secondary emissions associated with using a packed-bed wet scrubber range from 0.2 to 4.7 lb/yr of PM, 1.5 to 34 lb/yr of CO, 0.7 to 17 lb/yr of NO<sub>x</sub>, and 1.4 to 34 lb/yr of SO<sub>2</sub>.

## B. Fabric Filters

Fabric filters can be used to improve the PM (and associated particulate metals) emission control at HMIWI. Fabric filters can be installed either alone or before a wet scrubber. Table 4 presents the impacts estimated for fabric filters for each model HMIWI.

The solid waste impacts associated with using a fabric filter were estimated (as shown in the following equation) by calculating the amount of dust disposal, in tons per year (tpy).

Dust disposal (tpy) = PM inlet concentration (grains per dry standard cubic foot [gr/dscf]) x gas flow rate (dry standard cubic feet per minute [dscfm]) x 60 minutes per hour (min/hr) x 1 lb/7,000 gr x 1 ton/2,000 lb x operating hours per year (hr/yr)

The dust disposal calculation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI.<sup>3</sup> As shown in Table 4, the solid waste impacts associated with using a fabric filter range from 0.06 to 10 tpy.

The energy impacts associated with using a fabric filter were estimated (as shown in the following equation) by calculating the amount of electricity needed to operate the fabric filter and converting that amount to MM Btu/yr.

$$\text{Energy impacts (MM Btu/yr)} = 0.746 \text{ kilowatts/horsepower (kW/hp)} \times \text{horsepower (hp)} \times \text{operating hours per year (hr/yr)} \times 1 \text{ Btu}/0.000292875 \text{ kWh} \times 1 \text{ MM Btu}/10^6 \text{ Btu}$$

The electricity calculation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI.<sup>3</sup> The equation for horsepower is presented in Table 4. As shown in Table 4, the energy impacts associated with using a fabric filter range from 32 to 537 MM Btu/yr.

The secondary emissions were estimated by multiplying the energy impacts by the aforementioned PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> emission factors and projected generation mix for 2015. As shown in Table 4, the secondary emissions associated with using a fabric filter range from 0.5 to 8.8 lb/yr of PM, 3.7 to 64 lb/yr of CO, 1.9 to 32 lb/yr of NO<sub>x</sub>, and 3.7 to 63 lb/yr of SO<sub>2</sub>.

#### C. Dry Scrubbers

A dry scrubber can be used in concert with a fabric filter to reduce emissions of PM, as well as emissions of acid gases such as HCl. The predominant type of dry system used at HMIWI is a dry sorbent injection system followed by a fabric filter (DIFF). Table 5 presents the impacts estimated for DIFF for each model HMIWI.

The solid waste impacts associated with using DIFF were estimated (as shown in the following equation) by calculating the amount of dust disposal (in tpy).

$$\text{Dust disposal (tpy)} = [(\text{PM inlet concentration (gr/dscf)} \times \text{gas flow rate (dscfm)} \times 60 \text{ min/hr} \times 1 \text{ lb}/7,000 \text{ gr}) + (\text{HCl inlet concentration (parts per million by volume, dry basis [ppmvd]} \times \text{gas flow rate (dscfm)} \times 60 \text{ min/hr} \times 2.86\text{E-}7 \text{ lb/dscf})] \times 1 \text{ ton}/2,000 \text{ lb} \times \text{operating hours per year (hr/yr)}$$

The dust disposal calculation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI and a memo update.<sup>3,11</sup> As shown in Table 5, the solid waste impacts associated with using a DIFF range from 1.8 to 194 tpy.

The energy impacts associated with using a DIFF were estimated using the same equation as that used for fabric filters, with the same results, as shown in Table 5. The secondary emissions were estimated by multiplying these energy impacts by the aforementioned PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> emission factors and projected generation mix for 2015. As shown in Table 5, the secondary emissions associated with using a DIFF are estimated to be the same as those associated with using only a fabric filter.

#### D. Secondary Chamber Retrofits

Secondary chamber retrofits, which include retrofitting the incinerator with a larger secondary chamber (with a longer gas residence time, e.g., 2 seconds) and operating it at a higher temperature (e.g. 1800°F), can achieve greater reductions in emissions of combustion-related

pollutants such as CO and CDD/CDF. Table 6 presents the impacts estimated for secondary chamber retrofits for each model HMIWI.

The energy impacts associated with secondary chamber retrofits were estimated (as shown in the following equations) by calculating the amount of natural gas fired (in million cubic feet per year [MM ft<sup>3</sup>/yr]) and converting that amount to MM Btu/yr.

$$\text{Natural gas (MM Btu/yr)} = 0.32 \text{ Btu/lb/}^\circ\text{F} \times 28.5 \text{ lb/lb-mole} \times (1800 - 1700^\circ\text{F}) \text{ temperature increase} \times \text{lb-mole}/385 \text{ ft}^3 \times \text{ft}^3/1,000 \text{ Btu} \times \text{gas flow rate (dscfm)}/0.9 \times 60 \text{ min/hr} \times \text{operating hours per year (hr/yr)} \times 1 \text{ MM ft}^3/10^6 \text{ ft}^3 \times 1,000 \text{ MM Btu/MM ft}^3$$

The natural gas calculation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI and a memo update.<sup>3,12</sup> As shown in Table 6, the energy impacts associated with secondary chamber retrofits range from 142 to 3,790 MM Btu/yr.

The secondary emissions associated with secondary chamber retrofits were estimated (as shown in the following equations) by multiplying the amount of additional natural gas by the AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> associated with natural gas-fired boilers.

$$\text{Secondary PM emissions (lb/yr)} = \text{natural gas (MM ft}^3\text{/yr)} \times \text{AP-42 emission factor (1.9 lb PM/MM ft}^3\text{)}^7$$

$$\text{Secondary CO emissions (lb/yr)} = \text{natural gas (MM ft}^3\text{/yr)} \times \text{AP-42 emission factor (84 lb CO/MM ft}^3\text{)}^7$$

$$\text{Secondary NO}_x \text{ emissions (lb/yr)} = \text{natural gas (MM ft}^3\text{/yr)} \times \text{AP-42 emission factor (100 lb NO}_x\text{/MM ft}^3\text{)}^7$$

$$\text{Secondary SO}_2 \text{ emissions (lb/yr)} = \text{natural gas (MM ft}^3\text{/yr)} \times \text{AP-42 emission factor (0.6 lb SO}_2\text{/MM ft}^3\text{)}^7$$

As shown in Table 6, the secondary emissions associated with secondary chamber retrofits range from 0.3 to 7.2 lb/yr of PM, 12 to 318 lb/yr of CO, 14 to 379 lb/yr of NO<sub>x</sub>, and 0.09 to 2.3 lb/yr of SO<sub>2</sub>.

#### E. Selective Noncatalytic Reduction

SNCR systems have been used for NO<sub>x</sub> emission control on industrial boilers, electric utility steam generators, thermal incinerators, and municipal solid waste energy recovery facilities.<sup>13</sup> NO<sub>x</sub> reductions of 45 percent or higher are estimated for HMIWI using SNCR systems.<sup>14</sup> Table 7 presents the impacts estimated for SNCR for each model HMIWI.

The energy impacts associated with using SNCR systems were estimated (as shown in the following equation) by calculating the amount of electricity and converting that amount to MM Btu/yr. The electricity calculation is based on algorithms in the *OAQPS Control Cost Manual*.<sup>13</sup>

$$\text{Energy impacts (MM Btu/yr)} = 0.47 \times \text{kW [inlet NO}_x \text{ concentration (0.28 lb/MM Btu) } \times \text{incinerator charge rate (lb waste/hr)} \times \text{heating value (assumed 8,500 Btu/lb waste)} \times 1 \text{ MM Btu}/10^6 \text{ Btu} / 9.5] \times 1 \text{ Btu}/0.000292875 \text{ kWh} \times 1 \text{ MM Btu}/10^6 \text{ Btu} \times \text{operating hours per year (hr/yr)}$$

The algorithms are dependent on the NO<sub>x</sub> concentration at the inlet to the SNCR system, which was estimated to be 0.28 lb/million Btu (MM Btu), based on the average of the NO<sub>x</sub> concentration data for currently operating HMIWI. The NO<sub>x</sub> concentration for each HMIWI was

estimated (as shown in the following equation) using baseline emissions estimates developed in a separate memorandum:<sup>15</sup>

$$\text{NO}_x \text{ concentration (lb/MM Btu)} = \text{NO}_x \text{ baseline emissions (lb/yr)} / [\text{operating hours per year (hr/yr)} \times \text{incinerator charge rate (lb waste/hr)} \times \text{heating value (8,500 Btu/lb waste)}] \times 10^6 \text{ Btu/MM Btu}$$

As shown in Table 7, the energy impacts associated with using SNCR systems range from 0.08 to 3.6 MM Btu/yr. The secondary emissions were estimated by multiplying these energy impacts by the aforementioned PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> emission factors and projected generation mix for 2015. As shown in Table 7, the secondary emissions associated with using SNCR systems are very low, ranging from 0.001 to 0.06 lb/yr of PM, 0.009 to 0.4 lb/yr of CO, 0.005 to 0.2 lb/yr of NO<sub>x</sub>, and 0.009 to 0.4 lb/yr of SO<sub>2</sub>.

#### F. Activated Carbon Injection System

Injecting activated carbon before the fabric filter has been demonstrated to improve the removal efficiency of both Hg and CDD/CDF from HMIWI. Table 8 presents the impacts estimated for ACI systems for each model HMIWI.

The solid waste impacts associated with using ACI systems were estimated (as shown in the following equation) by calculating the amount of dust disposal (in tpy). The dust disposal equation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI.<sup>3</sup>

$$\text{Dust disposal} = 0.00127 \times \text{gas flow rate (dscfm)} \times 1 \text{ ton}/2,000 \text{ lb} \times \text{operating hours per year (hr/yr)}$$

The factor of 0.00127 in the equation is based on an ACI rate capable of producing a carbon concentration of 338 milligrams per dry standard cubic meter (mg/dscm), which is expected to achieve reductions of 90 percent for Hg and 98 percent for CDD/CDF relative to inlet levels. As shown in Table 8, the solid waste impacts associated with using ACI systems range from 0.6 to 15 tpy.

#### G. Incremental Controls

In some instances, it may not be necessary to install a new control system to achieve the emissions reductions necessary to meet the emission levels associated with the control options. An incremental reduction in emissions may be achievable by simply increasing the amount of caustic used in the wet scrubber; increasing the flow of lime, sodium bicarbonate (NaHCO<sub>3</sub>), or activated carbon prior to the fabric filter; or increasing the amount of natural gas used in the incinerator. Table 9 presents the model impacts for each of these incremental control measures, and the following sections discuss how the model impacts were estimated for each of the controls.

1. Increase caustic. One strategy to reduce acid gas emissions such as SO<sub>2</sub> further is to increase the amount of caustic used in the wet scrubber to react with and neutralize the acid gases in the gas stream. The addition of caustic is assumed to sufficiently reduce emissions without requiring any changes to the wet scrubber. The wastewater impacts associated with the addition of caustic were estimated using the same equation for sewage disposal employed for

packed-bed wet scrubbers and the same results were obtained for the four model HMIWI, as shown in Table 9.

2. Increase lime/sodium bicarbonate flow. Emissions of acid gases such as HCl may be reduced further by increasing the feed rate of lime or NaHCO<sub>3</sub> prior to the fabric filter. The solid waste impacts associated with increasing the flow of lime and NaHCO<sub>3</sub> were estimated (as shown in the following equation) by calculating the amount of dust disposal (in tpy).

Lime dust disposal (tpy) = [HCl inlet concentration (ppmvd)] x [gas flow rate (dscfm)] x [60 min/hr] x [2.86E-7 lb/dscf] x [1 ton/2,000 lb] x [operating hours per year (hr/yr)]

NaHCO<sub>3</sub> dust disposal (tpy) = [HCl inlet concentration (ppmvd)] x [gas flow rate (dscfm)] x [60 min/hr] x [2.10E-7 lb/dscf] x [1 ton/2,000 lb] x [operating hours per year (hr/yr)]

The dust disposal calculation is based on algorithms in the *Model Plant Description and Control Cost Report* for HMIWI and a memo update.<sup>3,11</sup> As shown in Table 9, the solid waste impacts range from 1.7 to 183 tpy with an increase in lime flow and 1.2 to 135 tpy with an increase in NaHCO<sub>3</sub> flow.

3. Increase activated carbon flow. As noted previously, injecting activated carbon before the fabric filter has been demonstrated to improve the removal efficiency of both Hg and CDD/CDF from HMIWI. The solid waste impacts associated with increasing activated carbon flow were estimated using the same equation for dust disposal employed for ACI systems, and the same results were obtained for the four model HMIWI, as shown in Table 9.

4. Increase natural gas use. One strategy to reduce CO and CDD/CDF emissions further is to increase the amount of natural gas fired in the secondary chamber and consequently increase the temperature in the secondary chamber. Carbon monoxide is a product of incomplete combustion, and increasing the temperature in the secondary chamber should subsequently increase the degree of combustion in the chamber; higher temperatures in the secondary chamber should also contribute to the decomposition of CDD/CDF compounds.<sup>16</sup> Combustion can be improved in other ways (e.g., tuning up burners or improving mixing in the secondary chamber), but for purposes of this memorandum, analyses were conservatively based on increased natural gas use. The energy impacts and secondary emissions associated with firing additional natural gas were estimated using the same equations employed for secondary chamber retrofits, and the same results were obtained for the four model HMIWI, as shown in Table 9.

#### H. Autoclave/Landfill

In some instances, the cost to comply with the re-developed HMIWI regulation may lead some facilities (e.g., hospitals) to switch to other waste treatment and disposal methods, such as onsite autoclaving, followed by landfilling the waste. Table 10 presents the model impacts associated with autoclaving the waste.

The energy impacts associated with using an autoclave were estimated (as shown in the following equation) by taking vendor estimates of sterilizer steam usage (lb/hr of steam) and

sterilizer/compactor electricity usage (kWh/hr of electricity) and converting those estimates to MM Btu/yr.<sup>17</sup>

Energy impacts (MM Btu/yr) = [Sterilizer steam usage (lb steam/hr) x (922 Btu/lb steam) x (1 MM Btu/10<sup>6</sup> Btu) x (operating hours per year [hr/yr])] + [sterilizer/compactor electrical usage (kWh/hr) x (1 Btu/0.000292875 kWh) x (1 MM Btu/10<sup>6</sup> Btu) x (operating hours per year [hr/yr])]

As shown in Table 10, the energy impacts associated with using an autoclave range from 38 to 1,107 MM Btu/yr. The secondary emissions were estimated by multiplying the energy impacts by the aforementioned PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> emission factors and projected generation mix for 2015. As shown in Table 10, the secondary emissions associated with using an autoclave range from 0.6 to 18 lb/yr of PM, 4.5 to 132 lb/yr of CO, 2.3 to 67 lb/yr of NO<sub>x</sub>, and 4.5 to 130 lb/yr of SO<sub>2</sub>.

The solid waste impacts associated with landfilling the autoclaved waste (as opposed to landfilling the incinerated waste) were estimated (as shown in the following equation), assuming a 90 percent reduction in solid waste with incineration. Table 11 presents the model impacts associated with landfilling the autoclaved waste.

Solid waste (tpy) = autoclaved waste landfilled [incinerator capacity x 67% operating factor] x [operating hours per year (hr/yr)] - incinerated waste landfilled [incinerator capacity x 67% operating factor] x [100% - 90% reduction in solid waste] x [operating hours per year (hr/yr)] x [1 ton/2,000 lb]

As shown in Table 11, the solid waste impacts associated with landfilling the autoclaved waste range from 57 to 2,714 tpy.

The methane (CH<sub>4</sub>) and Hg secondary emissions associated with landfilling the waste were estimated using a series of equations from AP-42, as shown in Table 11.<sup>18</sup> The CH<sub>4</sub> emissions are expected to be controlled and range from 0.3 to 16 tpy. Although Hg emissions from landfills are expected to be uncontrolled, Hg emissions are estimated to be minimal, ranging from 1.81E-05 to 8.67E-04 lb/yr.

### III. Nationwide Impacts

To determine nationwide secondary impacts for all 57 HMIWI currently operating, average emission estimates for each pollutant and each HMIWI currently operating were first compared to the MACT floor emission limits to determine which HMIWI would be impacted for a particular pollutant, and by how much. Then, the type of emission control needed to bring the HMIWI into compliance with the emission limit was determined. For example, if a HMIWI equipped with a DIFF was impacted for HCl by a substantial amount (e.g., over 50 percent), then it was determined that a packed-bed scrubber should be installed to bring the HMIWI into compliance with the HCl limit. If the HCl impact was minimal, then a less stringent control (e.g., adding more lime to the DIFF) was determined to be sufficient. This approach was taken with each pollutant individually, and the results were compared across all pollutants to determine the best combination of emission controls needed to bring the HMIWI into compliance with all of the MACT floor emission limits. See Table 12 for this list of emission controls.

Once the best combination of emission controls was determined, the model secondary impacts associated with those emission controls were assigned to the impacted HMIWI, based on which size category (large, medium, small non-rural, small rural) the impacted HMIWI belonged. For example, large model secondary impacts associated with packed-bed scrubbers and ACI systems would be applied to a large HMIWI that needs to install those emission controls to comply with the HCl and CDD/CDF emission limits. The model secondary impacts that would be applied would include the wastewater impacts, energy impacts, and secondary emissions associated with packed-bed scrubbers and the solid waste impacts associated with ACI systems. Table 12 show the secondary impacts estimates applied to each HMIWI at the MACT floor and presents estimated nationwide totals. The MACT floor totals in Table 12 show nationwide energy impacts of 99,100 MM Btu/yr (29,100 megawatt-hours per year [MWh/yr]); nationwide solid waste impacts of 4,400 tpy; nationwide wastewater impacts of 187,000 gpy; and nationwide secondary emissions of 21,000 lb/yr (including 900 lb/yr of PM, 8,900 lb/yr of CO, 9,300 lb/yr of NO<sub>x</sub>, and 1,900 lb/yr of SO<sub>2</sub>).

The approach described above was used to estimate secondary impacts for both the MACT floor and BTF options, except that for the BTF options, the type of control assigned at the MACT floor was taken into consideration in determining the type of BTF control. For example, if a HMIWI is impacted for HCl at the MACT floor and a packed-bed scrubber is determined to be necessary, then if the HMIWI is also impacted for HCl under the more stringent BTF option, the incremental control to achieve the BTF HCl limit might be to use more caustic in the packed-bed scrubber. See Table 13 for the list of emission controls determined to be necessary to bring HMIWI into compliance beyond the floor. Beyond-the-floor impacts are presented as both an incremental increase over the MACT floor impacts and as an overall BTF total that also includes both the MACT floor impacts and incremental BTF increase. Table 13 shows the secondary impacts estimates applied to each HMIWI beyond the floor and presents estimated nationwide totals. The overall BTF totals in Table 13 show nationwide energy impacts of 173,000 MM Btu/yr (50,700 MWh/yr); nationwide solid waste impacts of 6,700 tpy; nationwide wastewater impacts of 419,000 gpy; and nationwide secondary emissions of 36,200 lb/yr (including 1,200 lb/yr of PM, 15,600 lb/yr of CO, 16,800 lb/yr of NO<sub>x</sub>, and 2,600 lb/yr of SO<sub>2</sub>).

The secondary impacts associated with autoclaving and landfilling the waste were also assigned to each HMIWI, so that the impacts for this alternative option could be compared to the impacts for compliance at the floor and beyond the floor for each HMIWI. See Tables 12 and 13 for a comparison of autoclave/landfill impacts with MACT floor and BTF impacts for each HMIWI and also nationwide. As shown in Table 12, autoclave/landfill energy impacts are approximately 42,400 MM Btu/yr (12,400 MWh/yr); solid waste impacts are approximately 15,100 tpy; and secondary emissions are approximately 13,900 lb/yr (including 700 lb/yr of PM, 5,000 lb/yr of CO, 2,600 lb/yr of NO<sub>x</sub>, 5,000 lb/yr of SO<sub>2</sub>, 600 lb/yr of CH<sub>4</sub>, and 0.03 lb/yr of Hg). An estimated 13,300 lb/yr of secondary emissions comes from the autoclave and 600 lb/yr from the landfill. Compared to the MACT floor totals, the autoclave/landfill option has 43 percent of the energy impacts, 66 percent of the secondary emissions, and 3.4 times the solid waste impacts. Compared to the overall BTF totals, the autoclave/landfill option has 25 percent of the energy impacts, 43 percent of the secondary emissions, and 2.3 times the solid waste impacts.

#### IV. References

1. Memorandum from Thomas Holloway, RTI, to Mary Johnson, EPA. October 24, 2008. *MACT Floors, Data Variability Analysis, and Emission Limits for Existing and New HMIWI.*
2. Memorandum from Thomas Holloway, RTI, to Mary Johnson, EPA. October 24, 2008. *Beyond-the-Floor Options for Existing and New HMIWI.*
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**Table 1. Basis for Model HMIWI Parameters**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/ existing	APCD code	Maximum charge rate (lb/hr)	Stack gas flow rate (dscfm)	Operating hours (hr/yr)	HCl (ppmvd)	HCl % reduction	HCl unc. (ppmvd)	PM (gr/dscf)	PM % reduction	PM unc. (gr/dscf)
1	1	Bristol-Myers Squibb Co.		Wallingford	CT	L	E	FF	1,000	1,648	2,072	65.7			0.00180	99%	0.180
5	5	Merck & Company, Inc.		Rahway	NJ	L	E	DIFF	799	7,346	4,321	0.780			0.00330	99%	0.330
15	15-1	Curtis Bay Energy	Unit 1	Baltimore	MD	L	E	DIFF	7,083	27,698	8,736	85.2	93.19%	1,251	0.00823	99%	0.823
15	15-2	Curtis Bay Energy	Unit 2	Baltimore	MD	L	E	DIFF	7,083	30,578	8,736	76.9	92.27%	994	0.00407	99%	0.407
36	36-1	Merck & Company, Inc.	Unit 2	West Point (Upper Gwynedd Township)	PA	L	E	DIFF	2,000	5,235	865	4.22			0.00156	99%	0.156
36	36-2	Merck & Company, Inc.	Unit 5	West Point (Upper Gwynedd Township)	PA	L	E	DIFF	3,045	8,119	5,753	3.75			0.00255	99%	0.255
40	40	Charleston Area Medical Center, General Hospital		Charleston	WV	L	E	DIFF	1,000	4,323	1,248	26.6			0.00106	99%	0.106
42	42	Stericycle, Inc.		Apopka	FL	L	E	DIFF	1,900	7,008	7,951	27.1			0.00203	99%	0.203
51	51	Lakeland Regional Medical Center		Lakeland	FL	L	E	DIFF	750	3,323	6,247	2.68			0.00254	99%	0.254
60	60-1	BMWNC, Inc.	Unit 1	Matthews, Inc.	NC	L	E	DIFF	1,500	6,763	7,456	38.8	96.24%	1,031	0.00504	99%	0.504
84	84	Mayo Clinic, Waste Management Facility		Rochester	MN	L	E	DIFF	2,000	6,516	6,240	15.2	96.93%	497	0.0137	99%	1.367
87	87	MedCentral Health System, Mansfield Hospital		Mansfield	OH	L	E	DIFF	600	2,351	3,120	24.8			0.00357	99%	0.357
109	109	Healthcare Environmental Services Inc.		Fargo	ND	L	E	DIFF	1,686	4,478	1,872	72.5			0.00611	99%	0.611
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	Anahuac	TX	L	N	DIFF	4,167	10,031	7,896	11.0	98.76%	888	0.00702	99%	0.702
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	Anahuac	TX	L	N	DIFF	4,167	9,028	7,896	5.30	99.11%	594	0.00947	99%	0.947
29	29	Hamot Medical Center		Erie	PA	L	E	DIFF/WS	1,060	3,701	2,080	16.6			0.00174	99%	0.174
55	55	St. Joseph's Hospital		Tampa	FL	L	E	DIFF/WS	1,500	3,347	8,008	12.5			0.00111	99%	0.111
110	110	Stericycle, Inc.		North Salt Lake	UT	L	E	DI-ESP/WS	1,935	6,291	7,309	3.93			0.00449	99%	0.449
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		Greenville	NC	L	N	CA/WS	1,000	3,124	625	1.58	99.996%	43,053	0.00323	99%	0.323
20	20-1	Fort Detrick	Unit 5	Fort Detrick	MD	L	E	WS	1,000	2,424	1,300	0.190			0.00721	85%	0.048
20	20-2	Fort Detrick	Unit 6	Fort Detrick	MD	L	E	WS	1,000	2,308	1,300	0.353			0.00775	85%	0.052
43	43	Boca Raton Community Hospital		Boca Raton	FL	L	E	WS	730	2,078	8,736	0.986			0.0104	85%	0.069
44	44	Bethesda Memorial Hospital		Boynton Beach	FL	L	E	WS	1,000	4,537	3,024	0.608			0.00960	85%	0.064
46	46	Holy Cross Hospital		Fort Lauderdale	FL	L	E	WS	1,300	3,378	2,964	1.18			0.0103	85%	0.069
48	48	Memorial Regional Hospital		Hollywood	FL	L	E	WS	1,800	4,568	4,992	1.02			0.00973	85%	0.065
54	54	Bayfront Medical Center		St. Petersburg	FL	L	E	WS	1,500	2,898	3,352	0.947			0.00543	85%	0.036
59	59-1	Stericycle, Inc.	Unit 1	Haw River	NC	L	E	WS	1,911	4,002	8,400	4.24			0.00714	85%	0.048
59	59-2	Stericycle, Inc.	Unit 2	Haw River	NC	L	E	WS	1,911	3,917	8,400	3.88			0.0102	85%	0.068
65	65-1	Stericycle, Inc.	Unit 1	Clinton	IL	L	E	WS	1,500	3,304	7,665	1.12			0.00921	85%	0.061
65	65-2	Stericycle, Inc.	Unit 2	Clinton	IL	L	E	WS	1,500	3,125	7,558	1.43			0.00878	85%	0.059
71	71	Loyola University Medical Center		Maywood	IL	L	E	WS	1,650	3,526	4,800	2.22			0.0105	85%	0.070
77	77	Parkview Hospital		Fort Wayne	IN	L	E	WS	1,200	2,766	8,395	2.68	99.29%	380	0.0109	85%	0.073
94	94	Stericycle, Inc.		Warren	OH	L	E	WS	1,400	2,737	7,904	0.661			0.00617	85%	0.041
98	98-1	University of Texas Medical Branch		Galveston	TX	L	E	WS	1,500	4,534	5,328	2.12			0.0147	85%	0.098

**Table 1. Basis for Model HMIWI Parameters**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/existing	APCD code	Maximum charge rate (lb/hr)	Stack gas flow rate (dscfm)	Operating hours (hr/yr)	HCl (ppmvd)	HCl % reduction	HCl unc. (ppmvd)	PM (gr/dscf)	PM % reduction	PM unc. (gr/dscf)
106	106	Stericycle, Inc.		Kansas City	KS	L	E	WS	1,500	3,590	8,760	0.567			0.00828	85%	0.055
130	130	Department of Veterans Affairs Medical Center		Miami	FL	L	E	WS	1,000	6,422	4,160	8.32	99%	832	0.0111	85%	0.074
						<b>Avg L</b>			<b>1,500</b>	<b>3,959</b>	<b>5,997</b>	<b>3.82</b>	<b>98.8%</b>	<b>888</b>	<b>0.007</b>		<b>0.108</b>
						<b>Avg L, dry</b>						<b>24.83</b>	<b>96.6%</b>		<b>0.004</b>		
38	38	Wilkes-Barre General Hospital		Wilkes-Barre	PA	M	N	DIFF	400	2,063	4,472	8.95	95%	179	0.00399	99%	0.399
63	63	St. Jude Children's Research Hospital		Memphis	TN	M	E	DIFF	500	2,333	1,050	27.5	95%	551	0.00505	99%	0.505
95	95	St. Joseph's Hospital		Marshfield	WI	M	E	DIFF	500	1,634	1,404	5.27	95%	105	0.00294	99%	0.294
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		Baltimore	MD	M	E	WS	500	1,972	1,440	0.708	99%	71	0.0126	85%	0.084
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		Baltimore	MD	M	E	WS	320	1,890	1,350	1.39	99%	139	0.0294	85%	0.196
18	18	Franklin Square Hospital Center		Baltimore	MD	M	E	WS	500	2,999	5,408	1.48	99%	148	0.0256	85%	0.170
21	21	Washington County Hospital		Hagerstown	MD	M	E	WS	500	1,834	2,496	6.26	99%	626	0.0197	85%	0.131
25	25	Holy Spirit Hospital		Camp Hill	PA	M	E	WS	500	1,702	3,944	0.736	99%	74	0.0164	85%	0.110
30	30	Riddle Memorial Hospital		Media	PA	M	E	WS	500	1,730	2,920	2.10	99%	210	0.0124	85%	0.083
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		State College	PA	M	E	WS	500	2,117	1,022	1.27	99%	127	0.0239	85%	0.159
41	41	Thomas Memorial Hospital		South Charleston	WV	M	E	WS	470	1,526	2,080	2.62	99%	262	0.0261	85%	0.174
47	47	Malcolm Randall Veterans Affairs Medical Center		Gainesville	FL	M	E	WS	495	1,645	1,664	4.69	99%	469	0.0173	85%	0.115
81	81	South Bend Medical Foundation		South Bend	IN	M	E	WS	470	2,325	2,028	12.3	99%	1,230	0.01159	85%	0.077
82	82	Good Samaritan Hospital		Vincennes	IN	M	E	WS	500	1,352	2,574	1.58	99%	158	0.0137	85%	0.091
88	88	Medina General Hospital		Medina	OH	M	E	WS	300	1,153	3,016	3.29	99%	329	0.0267	85%	0.178
108	108-1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	Hamilton	MT	M	E	WS	500	1,790	1,248	0.455	99%	46	0.0216	85%	0.144
111	111	Wyoming Medical Center		Casper	WY	M	E	WS	400	1,505	989	1.17	99%	117	0.00336	85%	0.022
						<b>Avg M</b>			<b>500</b>	<b>1,790</b>	<b>2,028</b>	<b>2.10</b>		<b>158</b>	<b>0.016</b>		<b>0.144</b>
						<b>Avg M, dry</b>						<b>8.95</b>			<b>0.004</b>		
86	86	Fairfield Medical Center		Lancaster	OH	S	E	WS	95	1,095	5,018	1.03	99%	103	0.0137	85%	0.091
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	Atlanta	GA	S	N	WS	120	715	2,920	1.30	99%	130	0.00760	85%	0.051
						<b>Avg S</b>			<b>108</b>	<b>905</b>	<b>3,969</b>	<b>1.16</b>		<b>116</b>	<b>0.011</b>		<b>0.071</b>
115	115	Kona Community Hospital		Kealahou	HI	SR	E	CC	200	684	1,430	135		135	0.0128		0.0128
116	116	Yukon-Kuskokwim Delta Regional Hospital		Bethel	AK	SR	E	CC	50	559	1,560	298		298	0.0162		0.0162
						<b>Avg SR</b>			<b>125</b>	<b>621</b>	<b>1,495</b>	<b>216</b>		<b>216</b>	<b>0.015</b>		<b>0.015</b>

**Notes:**

1. Assumed values are highlighted in yellow.
2. For dry APCD, 95% HCl control assumed based on average % HCl control (96.59%) for several of the HMIWI in database equipped with dry APCD, and 99% PM control assumed based on % Pb and Cd control (99.6% and 99.2%) for a recently shutdown HMIWI (Northwest Hospital Center) equipped with a dry APCD.
3. For wet APCD, 99% HCl control assumed based on % HCl control (99.29%) for an HMIWI in database equipped with a wet APCD, and 85% PM control assumed based on % Pb and Cd control (87.2% and 88.4%) for a recently shutdown HMIWI (Northwest Hospital Center) equipped with a dry APCD.
4. For all units, 85% Hg control assumed based on median % Hg control (87.6%) for three HMIWI in database.

**Table 1. Basis for Model HMIWI Parameters**

FACID	UNITID	Facility name	Unit number	City	State	Category	NO <sub>x</sub> (lb/yr)	NO <sub>x</sub> (lb/hr)	NO <sub>x</sub> (lb/lb waste)	NO <sub>x</sub> (lb/MMBtu)
1	1	Bristol-Myers Squibb Co.		Wallingford	CT	L	2,273	1.10	0.0011	0.13
5	5	Merck & Company, Inc.		Rahway	NJ	L	19,121	4.43	0.0055	0.65
15	15-1	Curtis Bay Energy	Unit 1	Baltimore	MD	L	226,518	25.93	0.0037	0.43
15	15-2	Curtis Bay Energy	Unit 2	Baltimore	MD	L	237,734	27.21	0.0038	0.45
36	36-1	Merck & Company, Inc.	Unit 2	West Point (Upper Gwynedd Township)	PA	L	2,090	2.42	0.0012	0.14
36	36-2	Merck & Company, Inc.	Unit 5	West Point (Upper Gwynedd Township)	PA	L	21,826	3.79	0.0012	0.15
40	40	Charleston Area Medical Center, General Hospital		Charleston	WV	L	2,452	1.96	0.0020	0.23
42	42	Stericycle, Inc.		Apopka	FL	L	39,974	5.03	0.0026	0.31
51	51	Lakeland Regional Medical Center		Lakeland	FL	L	9,015	1.44	0.0019	0.23
60	60-1	BMWNC, Inc.	Unit 1	Matthews	NC	L	24,601	3.30	0.0022	0.26
84	84	Mayo Clinic, Waste Management Facility		Rochester	MN	L	35,973	5.76	0.0029	0.34
87	87	MedCentral Health System, Mansfield Hospital		Mansfield	OH	L	4,418	1.42	0.0024	0.28
109	109	Healthcare Environmental Services Inc.		Fargo	ND	L	8,612	4.60	0.0027	0.32
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	Anahuac	TX	L	28,677	3.63	0.0009	0.10
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	Anahuac	TX	L	31,733	4.02	0.0010	0.11
29	29	Hamot Medical Center		Erie	PA	L	6,563	3.16	0.0030	0.35
55	55	St. Joseph's Hospital		Tampa	FL	L	14,483	1.81	0.0012	0.14
110	110	Stericycle, Inc.		North Salt Lake	UT	L	67,691	9.26	0.0048	0.56
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		Greenville	NC	L	845	1.35	0.0014	0.16
20	20-1	Fort Detrick	Unit 5	Fort Detrick	MD	L	3,068	2.36	0.0024	0.28
20	20-2	Fort Detrick	Unit 6	Fort Detrick	MD	L	3,068	2.36	0.0024	0.28
43	43	Boca Raton Community Hospital		Boca Raton	FL	L	15,052	1.72	0.0024	0.28
44	44	Bethesda Memorial Hospital		Boynton Beach	FL	L	8,102	2.68	0.0027	0.32
46	46	Holy Cross Hospital		Fort Lauderdale	FL	L	4,403	1.49	0.0011	0.13
48	48	Memorial Regional Hospital		Hollywood	FL	L	20,301	4.07	0.0023	0.27
54	54	Bayfront Medical Center		St. Petersburg	FL	L	8,694	2.59	0.0017	0.20
59	59-1	Stericycle, Inc.	Unit 1	Haw River	NC	L	37,888	4.51	0.0024	0.28
59	59-2	Stericycle, Inc.	Unit 2	Haw River	NC	L	37,888	4.51	0.0024	0.28
65	65-1	Stericycle, Inc.	Unit 1	Clinton	IL	L	27,136	3.54	0.0024	0.28
65	65-2	Stericycle, Inc.	Unit 2	Clinton	IL	L	26,757	3.54	0.0024	0.28
71	71	Loyola University Medical Center		Maywood	IL	L	11,087	2.31	0.0014	0.16
77	77	Parkview Hospital		Fort Wayne	IN	L	23,777	2.83	0.0024	0.28
94	94	Stericycle, Inc.		Warren	OH	L	26,118	3.30	0.0024	0.28
98	98-1	University of Texas Medical Branch		Galveston	TX	L	12,637	2.37	0.0016	0.19

**Table 1. Basis for Model HMIWI Parameters**

FACID	UNITID	Facility name	Unit number	City	State	Category	NO <sub>x</sub> (lb/yr)	NO <sub>x</sub> (lb/hr)	NO <sub>x</sub> (lb/lb waste)	NO <sub>x</sub> (lb/MMBtu)
106	106	Stericycle, Inc.		Kansas City	KS	L	31,014	3.54	0.0024	0.28
130	130	Department of Veterans Affairs Medical Center		Miami	FL	L	13,396	3.22	0.0032	0.38
						<b>Avge L</b>				<b>0.28</b>
						<b>Avge L, dry</b>				
38	38	Wilkes-Barre General Hospital		Wilkes-Barre	PA	M	4,222	0.94	0.0024	0.28
63	63	St. Jude Children's Research Hospital		Memphis	TN	M	1,648	1.57	0.0031	0.37
95	95	St. Joseph's Hospital		Marshfield	WI	M	1,657	1.18	0.0024	0.28
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		Baltimore	MD	M	1,652	1.15	0.0023	0.27
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		Baltimore	MD	M	1,328	0.98	0.0031	0.36
18	18	Franklin Square Hospital Center		Baltimore	MD	M	10,116	1.87	0.0037	0.44
21	21	Washington County Hospital		Hagerstown	MD	M	2,946	1.18	0.0024	0.28
25	25	Holy Spirit Hospital		Camp Hill	PA	M	4,654	1.18	0.0024	0.28
30	30	Riddle Memorial Hospital		Media	PA	M	3,398	1.16	0.0023	0.27
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		State College	PA	M	1,206	1.18	0.0024	0.28
41	41	Thomas Memorial Hospital		South Charleston	WV	M	1,870	0.90	0.0019	0.23
47	47	Malcolm Randall Veterans Affairs Medical Center		Gainesville	FL	M	2,670	1.60	0.0032	0.38
81	81	South Bend Medical Foundation		South Bend	IN	M	460	0.23	0.0005	0.06
82	82	Good Samaritan Hospital		Vincennes	IN	M	3,038	1.18	0.0024	0.28
88	88	Medina General Hospital		Medina	OH	M	2,136	0.71	0.0024	0.28
108	108-1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	Hamilton	MT	M	1,884	1.51	0.0030	0.36
111	111	Wyoming Medical Center		Casper	WY	M	1,343	1.36	0.0034	0.40
						<b>Avge M</b>				<b>0.28</b>
						<b>Avge M, dry</b>				
86	86	Fairfield Medical Center		Lancaster	OH	S	1,125	0.22	0.0024	0.28
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	Atlanta	GA	S	827	0.28	0.0024	0.28
						<b>Avge S</b>				<b>0.28</b>
115	115	Kona Community Hospital		Kealahou	HI	SR	675	0.47	0.0024	0.28
116	116	Yukon-Kuskokwim Delta Regional Hospital		Bethel	AK	SR	163	0.10	0.0021	0.25
						<b>Avge SR</b>				<b>0.26</b>

**Notes:**

1. Assumed values are highlighted in yellow.
2. For dry APCD, 95% HCl control assumed based on average % HCl control (96.59%) for several of the HMIWI in database equipped with dry APCD, and 99% PM control assumed based on % Pb and Cd control (99.6% and 99.2%) for a recently shutdown HMIWI (Northwest Hospital Center) equipped with a dry APCD.
3. For wet APCD, 99% HCl control assumed based on % HCl control (99.29%) for an HMIWI in database equipped with a wet APCD, and 85% PM control assumed based on % Pb and Cd control (87.2% and 88.4%) for a recently shutdown HMIWI (Northwest Hospital Center) equipped with a dry APCD.
4. For all units, 85% Hg control assumed based on median % Hg control (87.6%) for three HMIWI in database.

**Table 2. Summary of Model Secondary Impacts**

Control option	Secondary pollutants	Large	Medium	Small	Small rural
<b>A. Solid Waste Impacts, tpy</b>					
1. Dry injection fabric filter		194	7.3	4.8	1.8
2. Fabric filter		10	2.3	1.1	0.06
3. Activated carbon injection system / increase carbon flow		15	2.3	2.3	0.6
4. Increase lime flow		183	4.9	3.7	1.7
5. Increase NaHCO <sub>3</sub> flow		135	3.6	2.7	1.2
6. Landfill (after autoclave)		2,714	302	121	57
<b>B. Wastewater Impacts, gpy</b>					
1. Packed-bed scrubber / increase caustic flow		6,533	353	47	2,156
<b>C. Energy Impacts, MMBtu/yr</b>					
1. Packed-bed scrubber		287	43.0	41.8	12.3
2. Dry injection fabric filter / fabric filter		537	90	108	32
3. Secondary chamber retrofit / increase natural gas		3,790	569	569	142
4. Selective noncatalytic reduction		3.6	0.4	0.2	0.08
5. Autoclave		1,107	136	102	38
<b>D. Secondary Emissions, lb/yr</b>					
1. Packed-bed scrubber	PM	4.7	0.7	0.7	0.2
	CO	34	5.1	5.0	1.5
	NO <sub>x</sub>	17	2.6	2.5	0.7
	SO <sub>2</sub>	34	5.0	4.9	1.4
2. Dry injection fabric filter / fabric filter	PM	8.8	1.5	1.8	0.5
	CO	64	11	13	3.7
	NO <sub>x</sub>	32	5.4	6.5	1.9
	SO <sub>2</sub>	63	11	13	3.7
3. Secondary chamber retrofit / increase natural gas	PM	7.2	1.1	1.1	0.3
	CO	318	48	48	12
	NO <sub>x</sub>	379	57	57	14
	SO <sub>2</sub>	2.3	0.3	0.3	0.09
4. Selective noncatalytic reduction	PM	0.06	0.007	0.003	0.001
	CO	0.4	0.05	0.02	0.009
	NO <sub>x</sub>	0.2	0.02	0.01	0.005
	SO <sub>2</sub>	0.4	0.05	0.02	0.009
5. Autoclave	PM	18	2.2	1.7	0.6
	CO	132	16	12	4.5
	NO <sub>x</sub>	67	8.2	6.1	2.3
	SO <sub>2</sub>	130	16	12	4.5
6. Landfill (after autoclave)	CH <sub>4</sub>	16	1.8	0.7	0.3
	Hg	8.67E-04	9.63E-05	3.85E-05	1.81E-05

**Table 3. Packed Bed Wet Scrubber Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
<b>A. Parameters</b>					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Temperature out of FF into quench, F (T1)		300	300	130	1,600
3. Temperature out of PB to ID fan, F (T2)		130	130	130	130
4. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
5. Exhaust gas flow rate (dry), dscfm (Qd)		4,000	1,800	900	600
6. Assumed moisture content in gas entering quench, % (M)		10	10	10	10
7. Exhaust gas flow rate, scfm (Qw)	$= (Qd) / (1 - M/100)$	4,444	2,000	1,000	667
8. Water added in quench, scfm (Qh)	$= ((7.010 \times (T1 - 77^\circ\text{F}) - 6.958 \times (T2 - 77^\circ\text{F})) \times 0.9 + (8.154 \times (T1 - 77^\circ\text{F}) - 8.064 \times (T2 - 77^\circ\text{F})) \times 0.1) \times (\text{lb-mole}/385 \text{ scf}) \times Qw / (1,160 \text{ Btu/lb}) / (18 \text{ lb/lb-mole}) \times (0.7302 \text{ ft}^3\text{-atm/lb-mol}\cdot^\circ\text{R}) \times 528^\circ\text{R} / 1 \text{ atm}$	259	116	0	335
9. Actual flow out of PB, acfm (Qa)	$= (Qw + Qh) \times (460^\circ\text{F} + T2)/(528^\circ\text{R})$	5,256	2,365	1,118	1,119
10. HCl concentration, ppmvd (HCl)		25	9	1.2	220
11. Assumed pressure drop through control system, inches of water ( $\Delta P$ )		15	15	15	15
12. Surface area-to-volume ratio for 1" dia. Ceramic Raschig rings, $\text{ft}^2/\text{ft}^3$ (SAV)		58	58	58	58
13. Minimum packing wetting rate, $\text{ft}^2/\text{hr}$ (WR)		1	1	1	1
14. Water density, $\text{lb}/\text{ft}^3$ (Wd)		62.4	62.4	62.4	62.4
15. Water circulation flow rate, $\text{lb}/\text{hr}\cdot\text{ft}^2$ (Gs)	$= \text{SAV} \times \text{Wd} \times \text{WR}$	4,705	4,705	4,705	4,705
16. Estimated column cross-sectional area from separate analysis, $\text{ft}^2$ (A)		19.2	8.6	3.8	4.7
17. Water circulation rate, gpm (GPM)	$= Gs \times A \times (1 \text{ hr}/60 \text{ min}) \times (1 \text{ gal}/8.33 \text{ lb})$	181	81	36	44
18. Water head, ft of water (Head)		60	60	60	60
19. Wastewater (blowdown) flow, gpm (B)	$= (\text{HCl}/1000000) \times (Qd) \times (\text{lb-mole}/385 \text{ ft}^3) \times (1 \text{ lb-mole NaCl}/1 \text{ lb-mole HCl}) \times (58.2 \text{ lb NaCl}/\text{lb-mole NaCl}) \times (1 \text{ lb wastewater}/0.1 \text{ lb NaCl}) \times (1 \text{ gal}/8.33 \text{ lb})$	0.018	0.003	0.0002	0.024
<b>B. Secondary Impacts</b>					
1. Energy impacts, kWh/yr					
a. kWh/yr	$= (0.000181 \times Qa \times \Delta P \times H) + (0.000289 \times \text{GPM} \times \text{Head} \times H)$	83,964	12,582	12,255	3,594
b. MMBtu/yr	$= [\text{electricity (kWh/yr)}] \times [1 \text{ Btu}/0.000292875 \text{ kWh}] \times [1 \text{ MM Btu}/10^6 \text{ Btu}]$	287	43.0	41.8	12.3
2. Wastewater impacts, gpy	$= B \times (60 \text{ min}/\text{hr}) \times H$	6,533	353	47.0	2,156
3. Secondary emissions, lb/yr					
a. PM	$= [\text{Energy impacts (MMBtu/yr)}] \times [\text{solid fuel emission factor (lb/MMBtu)}] \times [53\% \text{ energy generation from coal}] + [\text{energy impacts (MMBtu/yr)}] \times [\text{natural gas emission factor (lb/MMBtu)}] \times [22\% \text{ energy generation from oil/natural gas and other fuels}]$	4.7	0.7	0.7	0.2
b. CO		34	5.1	5.0	1.5
c. NO <sub>x</sub>		17	2.6	2.5	0.7
d. SO <sub>2</sub>		34	5.0	4.9	1.4

**Sources:**

1. Model Plant Description and Cost Report (II-A-112).
2. Wet Scrubber Cost Memorandum (IV-B-30).

Emission Factors	Value	Units
PM	1.9	lb/MM ft <sup>3</sup> natural gas
	0.00186275	lb/MMBtu natural gas
	0.03	lb/MMBtu solid, liquid, gaseous fuel
CO	84	lb/MM ft <sup>3</sup> natural gas
	0.0824	lb/MMBtu natural gas
	0.19	lb/MMBtu bituminous coal
NO <sub>x</sub>	100	lb/MM ft <sup>3</sup> natural gas
	0.0382	lb/MMBtu natural gas
	0.0975	lb/MMBtu solid fuel
SO <sub>2</sub>	0.6	lb/MM ft <sup>3</sup> natural gas
	0.00059	lb/MMBtu natural gas
	0.2211	lb/MMBtu solid fuel

Sources:

1. AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for natural gas combustion.

NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).

2. NSPS limit for PM (40 CFR part 60, subpart Da) for utility boilers.

3. AP-42 emission factor for CO for bituminous coal-fired spreader stoker boilers.

4. CAMD emission reports for NO<sub>x</sub> and SO<sub>2</sub> for solid fuel-fired utility boilers.

SO<sub>2</sub> reduced by 70% and NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar

reductions).

Assume electricity generated using the following mix (from IPM Version 3.0 for the year 2015):

Fuel	Percent of generation	Notes
Coal	53%	
Oil/natural gas	21%	
Nuclear	17%	No secondary air emissions estimated
Hydroelectric	6%	No secondary air emissions estimated
Renewable	2%	No secondary air emissions estimated
Other	1%	Assumed equivalent to natural gas

**Table 4. Fabric Filter Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
<b>A. Parameters</b>					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
3. Exhaust gas flow rate, dscfm (Q)		4,000	1,800	900	600
4. PM concentration, gr/dscf (PM)		0.10	0.15	0.07	0.015
<b>B. Secondary Impacts</b>					
1. Solid waste impacts, tpy	= PM x Q x [60 min/hr] x [1 lb/7,000 gr] x [1 ton/2,000 lb] x H	10	2.3	1.1	0.06
2. Energy impacts					
a. kWh/yr	= [0.746 kW/hp] x [hp (0.0072 x Q + 3.20)] x H	157,152	26,453	31,690	9,232
b. MMBtu/yr	= [Electricity (kWh/yr)] x [1 Btu / 0.000292875 kWh] x [1 MM Btu/10 <sup>6</sup> Btu]	537	90	108	32
3. Secondary emissions, lb/yr					
a. PM	= [Energy impacts (MMBtu/yr)] x [solid fuel emission factor (lb/MMBtu)] x [53% energy generation from coal] + [energy impacts (MMBtu/yr)] x [natural gas emission factor (lb/MMBtu)] x [22% energy generation from oil/natural gas and other fuels]	8.8	1.5	1.8	0.5
b. CO		64	11	13	3.7
c. NO <sub>x</sub>		32	5.4	6.5	1.9
d. SO <sub>2</sub>		63	11	13	3.7

Sources:

1. Model Plant Description and Cost Report (II-A-112).
2. Dry Injection Fabric Filter Cost Memorandum (IV-B-32).

<b>Emission Factors</b>	<b>Value</b>	<b>Units</b>
PM	1.9	lb/MM ft <sup>3</sup> natural gas
	0.00186275	lb/MMBtu natural gas
	0.03	lb/MMBtu solid, liquid, gaseous fuel
CO	84	lb/MM ft <sup>3</sup> natural gas
	0.0824	lb/MMBtu natural gas
	0.19	lb/MMBtu bituminous coal
NO <sub>x</sub>	100	lb/MM ft <sup>3</sup> natural gas
	0.0382	lb/MMBtu natural gas
	0.0975	lb/MMBtu solid fuel
SO <sub>2</sub>	0.6	lb/MM ft <sup>3</sup> natural gas
	0.00059	lb/MMBtu natural gas
	0.2211	lb/MMBtu solid fuel

Sources:

1. AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for natural gas combustion. NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).
2. NSPS limit for PM (40 CFR part 60, subpart Da) for utility boilers.
3. AP-42 emission factor for CO for bituminous coal-fired spreader stoker boilers.
4. CAMD emission reports for NO<sub>x</sub> and SO<sub>2</sub> for solid fuel-fired utility boilers. SO<sub>2</sub> reduced by 70% and NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).

Assume electricity generated using the following mix (from IPM Version 3.0 for the year 2015):

<b>Fuel</b>	<b>Percent of generation</b>	<b>Notes</b>
Coal	53%	
Oil/natural gas	21%	
Nuclear	17%	No secondary air emissions estimated
Hydroelectric	6%	No secondary air emissions estimated
Renewable	2%	No secondary air emissions estimated
Other	1%	Assumed equivalent to natural gas

**Table 5. Dry Injection Fabric Filter Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
<b>A. Parameters</b>					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
3. Exhaust gas flow rate, dscfm (Q)		4,000	1,800	900	600
4. HCl concentration, ppmvd (HCl)		890	160	120	220
5. PM concentration, gr/dscf (PM)		0.10	0.15	0.07	0.015
<b>B. Secondary Impacts</b>					
1. Solid waste impacts, tpy	$= [(PM \times Q \times 60 \text{ min/hr} \times 1 \text{ lb/7,000 gr}) + (HCl \times Q \times 60 \text{ min/hr} \times 2.86E-7 \text{ lb/dscf})] \times [1 \text{ ton/2,000 lb}] \times H$	194	7.3	4.8	1.8
<b>2. Energy impacts</b>					
a. kWh/yr	$= [0.746 \text{ kW/hp}] \times [\text{hp} (0.0079 \times Q + 3.51)] \times H$	157,152	26,453	31,690	9,232
b. MMBtu/yr	$= [\text{Electricity (kWh/yr)}] \times [1 \text{ Btu} / 0.000292875 \text{ kWh}] \times [1 \text{ MM Btu}/10^6 \text{ Btu}]$	537	90	108	32
<b>3. Secondary emissions, lb/yr</b>					
a. PM	$= [\text{Energy impacts (MMBtu/yr)}] \times [\text{solid fuel emission factor (lb/MMBtu)}] \times [53\% \text{ energy generation from coal}] + [\text{energy impacts (MMBtu/yr)}] \times [\text{natural gas emission factor (lb/MMBtu)}] \times [22\% \text{ energy generation from oil/natural gas and other fuels}]$	8.8	1.5	1.8	0.5
b. CO		64	11	13	3.7
c. NO <sub>x</sub>		32	5.4	6.5	1.9
d. SO <sub>2</sub>		63	11	13	3.7

Sources:

1. Model Plant Description and Cost Report (II-A-112).
2. Dry Injection Fabric Filter Cost Memorandum (IV-B-32).

Emission Factors	Value	Units
PM	1.9	lb/MM ft <sup>3</sup> natural gas
	0.00186275	lb/MMBtu natural gas
	0.03	lb/MMBtu solid, liquid, gaseous fuel
CO	84	lb/MM ft <sup>3</sup> natural gas
	0.0824	lb/MMBtu natural gas
	0.19	lb/MMBtu bituminous coal
NO <sub>x</sub>	100	lb/MM ft <sup>3</sup> natural gas
	0.0382	lb/MMBtu natural gas
	0.0975	lb/MMBtu solid fuel
SO <sub>2</sub>	0.6	lb/MM ft <sup>3</sup> natural gas
	0.00059	lb/MMBtu natural gas
	0.2211	lb/MMBtu solid fuel

Sources:

1. AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for natural gas combustion. NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).
2. NSPS limit for PM (40 CFR part 60, subpart Da) for utility boilers.
3. AP-42 emission factor for CO for bituminous coal-fired spreader stoker boilers.
4. CAMD emission reports for NO<sub>x</sub> and SO<sub>2</sub> for solid fuel-fired utility boilers. SO<sub>2</sub> reduced by 70% and NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).

Assume electricity generated using the following mix (from IPM Version 3.0 for the year 2015):

Fuel	Percent of generation	Notes
Coal	53%	
Oil/natural gas	21%	
Nuclear	17%	No secondary air emissions estimated
Hydroelectric	6%	No secondary air emissions estimated
Renewable	2%	No secondary air emissions estimated
Other	1%	Assumed equivalent to natural gas

**Table 6. Secondary Chamber Retrofit Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
<b>A. Parameters</b>					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
3. Exhaust gas flow rate, dscfm (Q)		4,000	1,800	900	600
<b>B. Secondary Impacts</b>					
1. Energy impacts (natural gas)					
a. MMft <sup>3</sup> /yr	= [0.32 Btu/lb°F] x [28.5 lb/lbmole] x [100°F] x [lbmole/385 ft <sup>3</sup> ] x [ft <sup>3</sup> /1,000 Btu] x [Q/0.9] x [60 min/hr] x H x [1 MMft <sup>3</sup> /10 <sup>6</sup> ft <sup>3</sup> ]	3.8	0.6	0.6	0.1
b. MMBtu/yr	= [Natural gas (MMft <sup>3</sup> /yr)] x [1,000 MMBtu/MMft <sup>3</sup> ]	3,790	569	569	142
2. Secondary emissions, lb/yr					
a. PM	= [Natural gas (MMft <sup>3</sup> /yr)] x [natural gas emission factor (lb/MMft <sup>3</sup> )]	7.2	1.1	1.1	0.3
b. CO		318	48	48	12
c. NO <sub>x</sub>		379	57	57	14
d. SO <sub>2</sub>		2.3	0.3	0.3	0.09

Sources:

1. Model Plant Description and Cost Report (II-A-112).
2. Secondary Chamber Retrofit Cost Memorandum (IV-B-33).

<b>Emission Factors</b>	<b>Value</b>	<b>Units</b>
PM	1.9	lb/MM ft <sup>3</sup> natural gas
	0.00186275	lb/MMBtu natural gas
	0.03	lb/MMBtu solid, liquid, gaseous fuel
CO	84	lb/MM ft <sup>3</sup> natural gas
	0.0824	lb/MMBtu natural gas
	0.19	lb/MMBtu bituminous coal
NO <sub>x</sub>	100	lb/MM ft <sup>3</sup> natural gas
	0.0382	lb/MMBtu natural gas
	0.0975	lb/MMBtu solid fuel
SO <sub>2</sub>	0.6	lb/MM ft <sup>3</sup> natural gas
	0.00059	lb/MMBtu natural gas
	0.2211	lb/MMBtu solid fuel

Sources:

1. AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for natural gas combustion. NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).
2. NSPS limit for PM (40 CFR part 60, subpart Da) for utility boilers.
3. AP-42 emission factor for CO for bituminous coal-fired spreader stoker boilers.
4. CAMD emission reports for NO<sub>x</sub> and SO<sub>2</sub> for solid fuel-fired utility boilers. SO<sub>2</sub> reduced by 70% and NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).

Assume electricity generated using the following mix (from IPM Version 3.0 for the year 2015):

<b>Fuel</b>	<b>Percent of generation</b>	<b>Notes</b>
Coal	53%	
Oil/natural gas	21%	
Nuclear	17%	No secondary air emissions estimated
Hydroelectric	6%	No secondary air emissions estimated
Renewable	2%	No secondary air emissions estimated
Other	1%	Assumed equivalent to natural gas

**Table 7. Selective Noncatalytic Reduction Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
<b>A. Parameters</b>					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
3. Exhaust gas flow rate, dscfm (Q)		4,000	1,800	900	600
4. Heating value, Btu/lb (HV)		8,500	8,500	8,500	8,500
5. NO <sub>x</sub> concentration, lb/MMBtu (NO <sub>x</sub> )		0.28	0.28	0.28	0.28
<b>B. Secondary Impacts</b>					
1. Energy impacts					
a. kWh/yr	= kW [0.47 x NO <sub>x</sub> x (C x HV) x (1 MM Btu/10 <sup>6</sup> Btu)] / 9.5 x H	1,060	118	47	22
b. MMBtu/yr	= [Electricity (kWh/yr)] x [1 Btu / 0.000292875 kWh] x [1 MM Btu/10 <sup>6</sup> Btu]	3.6	0.4	0.2	0.08
2. Secondary emissions, lb/yr					
a. PM	= [Energy impacts (MMBtu/yr)] x [solid fuel emission factor (lb/MMBtu)] x [53% energy generation from coal] + [energy impacts (MMBtu/yr)] x [natural gas emission factor (lb/MMBtu)] x [22% energy generation from oil/natural gas and other fuels]	0.06	0.007	0.003	0.001
b. CO		0.4	0.05	0.02	0.009
c. NO <sub>x</sub>		0.2	0.02	0.01	0.005
d. SO <sub>2</sub>		0.4	0.05	0.02	0.009

Source:

1. OAQPS Control Cost Manual. Section 4.2: NO<sub>x</sub> Post-Combustion, Chapter 1: Selective Noncatalytic Reduction.

Emission Factors	Value	Units
PM	1.9	lb/MM ft <sup>3</sup> natural gas
	0.00186275	lb/MMBtu natural gas
	0.03	lb/MMBtu solid, liquid, gaseous fuel
CO	84	lb/MM ft <sup>3</sup> natural gas
	0.0824	lb/MMBtu natural gas
	0.19	lb/MMBtu bituminous coal
NO <sub>x</sub>	100	lb/MM ft <sup>3</sup> natural gas
	0.0382	lb/MMBtu natural gas
	0.0975	lb/MMBtu solid fuel
SO <sub>2</sub>	0.6	lb/MM ft <sup>3</sup> natural gas
	0.00059	lb/MMBtu natural gas
	0.2211	lb/MMBtu solid fuel

Sources:

1. AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for natural gas combustion. NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).
2. NSPS limit for PM (40 CFR part 60, subpart Da) for utility boilers.
3. AP-42 emission factor for CO for bituminous coal-fired spreader stoker boilers.
4. CAMD emission reports for NO<sub>x</sub> and SO<sub>2</sub> for solid fuel-fired utility boilers. SO<sub>2</sub> reduced by 70% and NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).

Assume electricity generated using the following mix (from IPM Version 3.0 for the year 2015):

Fuel	Percent of generation	Notes
Coal	53%	
Oil/natural gas	21%	
Nuclear	17%	No secondary air emissions estimated
Hydroelectric	6%	No secondary air emissions estimated
Renewable	2%	No secondary air emissions estimated
Other	1%	Assumed equivalent to natural gas

**Table 8. Activated Carbon Injection Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
A. Parameters					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
3. Exhaust gas flow rate, dscfm (Q)		4,000	1,800	900	600
4. PM concentration, gr/dscf (PM)		0.10	0.15	0.07	0.015
B. Secondary Impacts					
1. Solid waste impacts, tpy	$= 0.00127 \times Q \times [1 \text{ ton}/2,000 \text{ lb}] \times H$	15	2.3	2.3	0.6

Source:

1. Model Plant Description and Cost Report (II-A-112).

**Table 9. Secondary Impacts for Incremental Controls**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
<b>A. Parameters</b>					
1. Incinerator capacity, lb/hr (IC)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
3. Exhaust gas flow rate, dscfm (Q)		4,000	1,800	900	600
4. Unc. HCl concentration, ppmvd (HCl <sub>u</sub> )		890	160	120	220
5. Cont. HCl concentration, ppmvd (HCl <sub>c</sub> )		1.1	1.5	1.2	220
6. PM concentration, gr/dscf (PM)		0.10	0.15	0.07	0.015
7. Wastewater (blowdown) flow, gpm (B)		0.018	0.003	0.0002	0.024
<b>B. Increase Caustic Flow</b>					
1. Wastewater impacts, gpy	= B x (60 min/hr) x H	6,533	353	47	2,156
<b>C. Increase Lime Flow</b>					
1. Solid waste impacts, tpy	= HCl x Q x (60 min/hr) x (2.86E-7 lb/dscf) x (1 ton/2,000 lb) x H	183	4.9	3.7	1.7
<b>C. Increase NaHCO<sub>3</sub> Flow</b>					
1. Solid waste impacts, tpy	= HCl x Q x (60 min/hr) x (2.10E-7 lb/dscf) x (1 ton/2,000 lb) x H	135	3.6	2.7	1.2
<b>D. Increase Carbon Flow</b>					
1. Solid waste impacts, tpy	= 0.00127 x Q x [1 ton/2,000 lb] x H	15	2.3	2.3	0.6
<b>E. Increase Natural Gas</b>					
1. Energy impacts (natural gas)					
a. MMft <sup>3</sup> /yr	= [0.32 Btu/lb/°F] x [28.5 lb/lbmole] x [1800 - 1700°F temperature increase] x [lbmole/385 ft <sup>3</sup> ] x [ft <sup>3</sup> /1,000 Btu] x [Q/0.9] x [60 min/hr] x H x [1 MMft <sup>3</sup> /10 <sup>6</sup> ft <sup>3</sup> ]	3.8	0.6	0.6	0.1
b. MMBtu/yr	= [Natural gas (MMft <sup>3</sup> /yr)] x [1,000 MMBtu/MMft <sup>3</sup> ]	3,790	569	569	142
2. Secondary emissions, lb/yr					
a. PM	= [Natural gas (MMft <sup>3</sup> /yr)] x [natural gas emission factor (lb/MMft <sup>3</sup> )]	7.2	1.1	1.1	0.3
b. CO		318	48	48	12
c. NO <sub>x</sub>		379	57	57	14
d. SO <sub>2</sub>		2.3	0.3	0.3	0.09

**Sources:**

1. Model Plant Description and Cost Report (II-A-112)
2. Secondary Chamber Retrofit Cost Memorandum (IV-B-33)
3. Wet Scrubber Cost Memorandum (IV-B-30)
4. Dry Injection Fabric Filter Cost Memorandum (IV-B-32)

Emission Factors	Value	Units
PM	1.9	lb/MM ft <sup>3</sup> natural gas
	0.00186275	lb/MMBtu natural gas
	0.03	lb/MMBtu solid, liquid, gaseous fuel
CO	84	lb/MM ft <sup>3</sup> natural gas
	0.0824	lb/MMBtu natural gas
	0.19	lb/MMBtu bituminous coal
NO <sub>x</sub>	100	lb/MM ft <sup>3</sup> natural gas
	0.0382	lb/MMBtu natural gas
	0.0975	lb/MMBtu solid fuel
SO <sub>2</sub>	0.6	lb/MM ft <sup>3</sup> natural gas
	0.00059	lb/MMBtu natural gas
	0.2211	lb/MMBtu solid fuel

Sources:

1. AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for natural gas combustion.

NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have

achieved in 2015 (assuming CAIR replacement achieves similar reductions).

2. NSPS limit for PM (40 CFR part 60, subpart Da) for utility boilers.

3. AP-42 emission factor for CO for bituminous coal-fired spreader stoker boilers.

4. CAMD emission reports for NO<sub>x</sub> and SO<sub>2</sub> for solid fuel-fired utility boilers.

SO<sub>2</sub> reduced by 70% and NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).

Assume electricity generated using the following mix (from IPM Version 3.0 for the year 2015):

Fuel	Percent of generation	Notes
Coal	53%	
Oil/natural gas	21%	
Nuclear	17%	No secondary air emissions estimated
Hydroelectric	6%	No secondary air emissions estimated
Renewable	2%	No secondary air emissions estimated
Other	1%	Assumed equivalent to natural gas

**Table 10. Autoclave Treatment Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
A. Parameters					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
B. Secondary Impacts					
1. Energy impacts					
a. Sterilizer steam usage, lb/hr	From vendor quote	195.22	69.74	25.51	25.51
b. Sterilizer electrical usage, kWh/hr	From vendor quote	0.69	0.429	0.36	0.36
c. Compactor electrical usage, kWh/hr	From vendor quote	0.62	0.62	0.22	0.22
d. Total, MMBtu/yr	[Sterilizer steam usage (lb steam/hr x 922 Btu/lb steam) x (1 MM Btu/10 <sup>6</sup> Btu) x H] + [total electrical usage kWh/hr x (1 Btu/0.000292875 kWh) x (1 MM Btu/10 <sup>6</sup> Btu) x H]	1,107	136	102	38
2. Secondary emissions, lb/yr					
a. PM	= [Energy impacts (MMBtu/yr)] x [solid fuel emission factor (lb/MMBtu)] x [53% energy generation from coal]	18	2.2	1.7	0.6
b. CO		132	16	12	4.5
c. NO <sub>x</sub>	+ [energy impacts (MMBtu/yr)] x [natural gas emission factor (lb/MMBtu)] x [22% energy generation from oil/natural gas and other fuels]	67	8.2	6.1	2.3
d. SO <sub>2</sub>		130	16	12	4.5

Source:

San-I-Pak vendor quote.

Emission Factors	Value	Units
PM	1.9	lb/MM ft <sup>3</sup> natural gas
	0.00186275	lb/MMBtu natural gas
	0.03	lb/MMBtu solid, liquid, gaseous fuel
CO	84	lb/MM ft <sup>3</sup> natural gas
	0.0824	lb/MMBtu natural gas
	0.19	lb/MMBtu bituminous coal
NO <sub>x</sub>	100	lb/MM ft <sup>3</sup> natural gas
	0.0382	lb/MMBtu natural gas
	0.0975	lb/MMBtu solid fuel
SO <sub>2</sub>	0.6	lb/MM ft <sup>3</sup> natural gas
	0.00059	lb/MMBtu natural gas
	0.2211	lb/MMBtu solid fuel

Sources:

1. AP-42 emission factors for PM, CO, NO<sub>x</sub>, and SO<sub>2</sub> for natural gas combustion.

NO<sub>x</sub> reduced by 61% to reflect reductions similar to what CAIR would have

achieved in 2015 (assuming CAIR replacement achieves similar reductions).

2. NSPS limit for PM (40 CFR part 60, subpart Da) for utility boilers.

3. AP-42 emission factor for CO for bituminous coal-fired spreader stoker boilers.

4. CAMD emission reports for NO<sub>x</sub> and SO<sub>2</sub> for solid fuel-fired utility boilers.

SO<sub>2</sub> reduced by 70% and NO<sub>x</sub> reduced by 61% to reflect reductions similar to what

CAIR would have achieved in 2015 (assuming CAIR replacement achieves similar reductions).

Assume electricity generated using the following mix (from IPM Version 3.0 for the year 2015):

Fuel	Percent of generation	Notes
Coal	53%	
Oil/natural gas	21%	
Nuclear	17%	No secondary air emissions estimated
Hydroelectric	6%	No secondary air emissions estimated
Renewable	2%	No secondary air emissions estimated
Other	1%	Assumed equivalent to natural gas

**Table 11. Landfill Secondary Impacts**

Parameters/Costs	Equation	Large	Medium	Small	Small rural
<b>A. Parameters</b>					
1. Incinerator capacity, lb/hr (C)		1,500	500	100	125
2. Annual operating hours, hr/yr (H)		6,000	2,000	4,000	1,500
3. CH <sub>4</sub> generation potential, m <sup>3</sup> /Mg (Lo)	assume Lo = 100 m <sup>3</sup> /Mg	100	100	100	100
4. Average annual refuse acceptance rate, Mg/yr (R)	$[(C \times 0.67)/(2,000 \text{ lb/ton})] \times (0.90718 \text{ Mg/ton}) \times H$	2,735	304	122	57
5. CH <sub>4</sub> generation constant, yr <sup>-1</sup> (k)	assume k = 0.04 yr <sup>-1</sup> (for areas receiving ≥25 inches/yr of rain)	0.04	0.04	0.04	0.04
6. Time since landfill closure, yr (c)	assume c = 0 yrs (for active landfills)	0	0	0	0
7. Time since initial refuse placement, yr (t)	assume t = 10 yrs (to reach steady state)	10	10	10	10
8. CH <sub>4</sub> molecular weight, g/g-mol (MW <sub>CH4</sub> )		16.05	16.05	16.05	16.05
9. Temperature of landfill gas, °C (T)	assume T = 25°C	25	25	25	25
10. Collection efficiency of landfill gas collection system (η <sub>col</sub> )	assume η <sub>col</sub> = 75%	75%	75%	75%	75%
11. Control efficiency of landfill gas control device (η <sub>cnt</sub> )	assume η <sub>cnt</sub> = 99.7% (for flare controlling non-halogenated compounds)	99.7%	99.7%	99.7%	99.7%
12. Hg concentration in landfill, (Hg)		2.92E-04	2.92E-04	2.92E-04	2.92E-04
13. Hg molecular weight, g/g-mol (MW <sub>Hg</sub> )		200.59	200.59	200.59	200.59
<b>B. Secondary Impacts</b>					
1. Solid waste impacts, tpy	$[\text{autoclaved waste landfilled } (C \times 0.67 \times H) - \text{incinerated waste landfilled } (C \times 0.67 \times 0.1 \times H)] \times (1 \text{ ton}/2,000 \text{ lb})$	2,714	302	121	57
2. CH <sub>4</sub> secondary emissions					
a. Uncontrolled CH <sub>4</sub> emission rate, m <sup>3</sup> /yr (Q <sub>CH4</sub> )	$= Lo \times R \times (e^{-kc} - e^{-kt})$	90,172	10,019	4,008	1,879
b. Uncontrolled CH <sub>4</sub> mass emissions, tpy (UM <sub>CH4</sub> )	$= Q_{CH4} \times (MW_{CH4} \times 1 \text{ atm}) / [(8.205E-05 \text{ m}^3\text{-atm/g-mol-}^\circ\text{K}) \times (1,000 \text{ g/kg}) \times (273 + T)^\circ\text{K}] \times (1 \text{ ton}/907.1847 \text{ kg})$	65	7.2	2.9	1.4
b. Controlled CH <sub>4</sub> mass emissions, tpy (CM <sub>CH4</sub> )	$= [UM_{CH4} \times (1 - \eta_{col}/100)] + [UM_{CH4} \times \eta_{col}/100 \times (1 - \eta_{cnt}/100)]$	16	1.8	0.7	0.3
3. Hg secondary emissions					
a. Uncontrolled Hg emission rate, m <sup>3</sup> /yr (Q <sub>Hg</sub> )	$1.82 \times Q_{CH4} \times \text{Hg}/(1E06)$	4.79E-05	5.32E-06	2.13E-06	9.98E-07
b. Uncontrolled Hg, mass emissions, lb/yr (UM <sub>Hg</sub> )	$= Q_{Hg} \times (MW_{Hg} \times 1 \text{ atm}) / [(8.205E-05 \text{ m}^3\text{-atm/g-mol-}^\circ\text{K}) \times (1,000 \text{ g/kg}) \times (273 + T)^\circ\text{K}] \times (1 \text{ lb}/0.4535924 \text{ kg})$	8.67E-04	9.63E-05	3.85E-05	1.81E-05

**Notes:**

1. Assume 90% reduction in solid waste with incineration.
2. Assume Hg emissions from landfill are uncontrolled.

**Source:**

U.S. Environmental Protection Agency. 1998. AP-42, Fifth Edition, Volume I, Section 2.4, Municipal Solid Waste Landfills. November.

**Table 12. Nationwide MACT Floor Secondary Impacts for Existing Sources**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/ existing	APCD code	APCD type	APCD description	Maximum charge rate (lb/hr)
1	1	Bristol-Myers Squibb Co.		Wallingford	CT	L	E	FF	Dry	Secondary chamber (1800F) and baghouse	1,000
5	5	Merck & Company, Inc.		Rahway	NJ	L	E	DIFF	Dry	Secondary chamber (1500F, 1 sec), partial quench, dry acid gas scrubber with dry lime injection, and baghouse	799
15	15--1	Curtis Bay Energy	Unit 1	Baltimore	MD	L	E	DIFF	Dry	Secondary chamber, dry scrubber, and baghouse	7,083
15	15--2	Curtis Bay Energy	Unit 2	Baltimore	MD	L	E	DIFF	Dry	Secondary chamber, dry scrubber, and baghouse	7,083
20	20--1	Fort Detrick	Unit 5	Fort Detrick	MD	L	E	WS	Wet	Secondary chamber and rotary atomizing wet scrubber	1,000
20	20--2	Fort Detrick	Unit 6	Fort Detrick	MD	L	E	WS	Wet	Secondary chamber and rotary atomizing wet scrubber	1,000
29	29	Hamot Medical Center		Erie	PA	L	E	DIFF/WS	Dry/wet	Secondary chamber (2000F, 2 sec), lime injection system, powdered activated carbon injection system, baghouse, and vertical upflow two-stage multi-microventuri scrubber system	1,060
36	36--1	Merck & Company, Inc.	Unit 2	West Point (Upper Gwynedd Township)	PA	L	E	DIFF	Dry	Secondary/tertiary chamber (2000F, 2 sec), water quench followed by sodium bicarbonate injection system with dry reaction chamber and pulse-jet baghouse	2,000
36	36--2	Merck & Company, Inc.	Unit 5	West Point (Upper Gwynedd Township)	PA	L	E	DIFF	Dry	Secondary chamber (1800F, 2.2 sec), water quench followed by sodium bicarbonate injection system and pulse-jet baghouse	3,045
40	40	Charleston Area Medical Center, General Hospital		Charleston	WV	L	E	DIFF	Dry	Secondary chamber (1800F, 2 sec), dry injection/baghouse scrubber system with activated carbon	1,000
42	42	Stericycle, Inc.		Apopka	FL	L	E	DIFF	Dry	Secondary chamber (1800, 1 sec), dry scrubbing system with quench chamber, passive absorber, lime and carbon injection, and baghouse.	1,900
43	43	Boca Raton Community Hospital		Boca Raton	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec) and rotary atomizing wet scrubber system with caustic soda injection	730
44	44	Bethesda Memorial Hospital		Boynton Beach	FL	L	E	WS	Wet	Secondary chamber (1800F, 2 sec) and rotary atomizing scrubber with mist eliminator	1,000
46	46	Holy Cross Hospital		Fort Lauderdale	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec) and venturi scrubber with packed bed absorption unit using dilute NaOH	1,300
48	48	Memorial Regional Hospital		Hollywood	FL	L	E	WS/WESP	Wet	Secondary chamber (1800F, 1 sec), packed column gas scrubber, and wet ESP	1,800
51	51	Lakeland Regional Medical Center		Lakeland	FL	L	E	DIFF	Dry	Secondary chamber (1800F, 1 sec), lime injection system, and baghouse	750
54	54	Bayfront Medical Center		St. Petersburg	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec) and flux force/condensation collision scrubber system using dilute NaOH	1,500
55	55	St. Joseph's Hospital		Tampa	FL	L	E	DIFF/WS	Dry/wet	Secondary chamber (1800F, 1 sec), lime injection, baghouse, and venturi scrubber	1,500
59	59--1	Stericycle, Inc.	Unit 1	Haw River	NC	L	E	WS	Wet	Secondary chamber (1800F, 1 sec), rapid gas quench system, wet scrubber system consisting of a packed bed absorber and venturi scrubber, and demister.	1,911
59	59--2	Stericycle, Inc.	Unit 2	Haw River	NC	L	E	WS	Wet	Secondary chamber (1800F, 1 sec), rapid gas quench system, wet scrubber system consisting of a packed bed absorber and venturi scrubber, and demister.	1,911
60	60--1	BMWNC, Inc.	Unit 1	Matthews	NC	L	E	DIFF	Dry	Secondary chamber (1641F), dry scrubber with lime and activated carbon injection, and baghouse	1,500

**Table 12. Nationwide MACT Floor Secondary Impacts for Existing Sources**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/existing	APCD code	APCD type	APCD description	Maximum charge rate (lb/hr)
65	65-1	Stericycle, Inc.	Unit 1	Clinton	IL	L	E	WS	Wet	Secondary chamber (1800F), venturi scrubber, and condensing absorber	1,500
65	65-2	Stericycle, Inc.	Unit 2	Clinton	IL	L	E	WS	Wet	Secondary chamber (1800F), venturi scrubber, and condensing absorber	1,500
71	71	Loyola University Medical Center		Maywood	IL	L	E	WS	Wet	Two secondary chambers (1600F), twin rotary atomizer scrubber using 50% caustic solution, and two demister pads	1,650
77	77	Parkview Hospital		Fort Wayne	IN	L	E	WS	Wet	Secondary chamber and wet scrubber	1,200
84	84	Mayo Clinic, Waste Management Facility		Rochester	MN	L	E	DIFF	Dry	Secondary chamber (1800F, 1 sec) and baghouse with lime and carbon injection	2,000
87	87	MedCentral Health System, Mansfield Hospital		Mansfield	OH	L	E	DIFF	Dry	Secondary chamber (1800F, 2 sec) and baghouse with lime and carbon injection system	600
94	94	Stericycle, Inc.		Warren	OH	L	E	WS	Wet	Secondary chamber (1800F, 2 sec), wet scrubber	1,400
98	98-1	University of Texas Medical Branch		Galveston	TX	L	E	WS	Wet	Secondary chamber, packed tower, and venturi scrubber with activated carbon injection	1,500
106	106	Stericycle, Inc.		Kansas City	KS	L	E	WS	Wet	Secondary chamber (1800F, 2 sec), wet scrubber	1,500
109	109	Healthcare Environmental Services Inc.		Fargo	ND	L	E	DIFF	Dry	Secondary chamber (1800F) and dry scrubber/baghouse system with lime and carbon injection	1,686
110	110	Stericycle, Inc.		North Salt Lake	UT	L	E	DI-ESP/WS	Dry/wet	Secondary chamber (1834F), carbon injection system, ESP, dry scrubber, and wet gas absorber	1,935
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	Anahuac	TX	L	N	DIFF	Dry	Secondary chamber, baghouse with virgin lime injection, urea injection, and activated carbon injection	4,167
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	Anahuac	TX	L	N	DIFF	Dry	Secondary chamber, baghouse with virgin lime injection, urea injection, and activated carbon injection	4,167
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		Greenville	NC	L	N	CA/WS	Dry/wet	Secondary chamber (1985F), rotary atomizing wet scrubber (with NaOH scrubbing medium), carbon bed adsorber, HEPA filtering system, and heat recovery system	1,000
130	130	Department of Veterans Affairs Medical Center		Miami	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec), venturi scrubber, and packed tower absorber	1,000
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		Baltimore	MD	M	E	WS	Wet	Secondary chamber (1832F) and venturi caustic scrubber with packed-bed scrubber	500
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		Baltimore	MD	M	E	WS	Wet	Secondary chamber (1800F) and venturi wet scrubber followed by saturation chamber and mist eliminator	320
18	18	Franklin Square Hospital Center		Baltimore	MD	M	E	WS	Wet	Secondary chamber (1800F) and venturi scrubber followed by quench chamber and mist eliminator	500
21	21	Washington County Hospital		Hagerstown	MD	M	E	WS	Wet	Secondary chamber and venturi caustic scrubber	500
25	25	Holy Spirit Hospital		Camp Hill	PA	M	E	WS	Wet	Secondary chamber (1800F) and venturi scrubber with prequench and NaOH injection	500
30	30	Riddle Memorial Hospital		Media	PA	M	E	WS	Wet	Secondary chamber (1800F, 2 sec), caustic packed tower scrubber, and high pressure venturi, with activated carbon injection	500
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		State College	PA	M	E	WS	Wet	Secondary chamber (1900F) and rotary atomizing wet scrubber with demister	500
38	38	Wilkes-Barre General Hospital		Wilkes-Barre	PA	M	N	DIFF	Dry	Secondary/tertiary chambers (1800F, 2.85 sec) and dry scrubber/baghouse with lime and activated carbon injection	400
41	41	Thomas Memorial Hospital		South Charleston	WV	M	E	WS	Wet	Secondary chamber (1800F) and venturi packed tower wet scrubber with caustic injection	470
47	47	Malcolm Randall Veterans Affairs Medical Center		Gainesville	FL	M	E	WS	Wet	Secondary chamber (1800F, 1 sec) and wet scrubber with caustic soda injection	495

**Table 12. Nationwide MACT Floor Secondary Impacts for Existing Sources**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/existing	APCD code	APCD type	APCD description	Maximum charge rate (lb/hr)
63	63	St. Jude Children's Research Hospital		Memphis	TN	M	E	DIFF	Dry	Secondary chamber (1528F) and baghouse with sodium bicarbonate and carbon injection	500
81	81	South Bend Medical Foundation		South Bend	IN	M	E	WS	Wet	Secondary chamber and wet scrubber	470
82	82	Good Samaritan Hospital		Vincennes	IN	M	E	WS	Wet	Secondary chamber and multi-chamber spray scrubber	500
88	88	Medina General Hospital		Medina	OH	M	E	WS	Wet	Secondary chamber (1800F, 1 sec) and wet scrubber	300
95	95	St. Joseph's Hospital		Marshfield	WI	M	E	DIFF	Dry	Secondary chamber (1800F), quench tower, and baghouse with lime/carbon injection	500
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	Hamilton	MT	M	E	WS	Wet	Secondary chamber and wet scrubber	500
111	111	Wyoming Medical Center		Casper	WY	M	E	WS	Wet	Secondary chamber and wet scrubber	400
86	86	Fairfield Medical Center		Lancaster	OH	S	E	WS	Wet	Secondary chamber (1800F, 1 sec) and wet scrubber	95
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	Atlanta	GA	S	N	WS	Wet	Secondary chamber (1800F, 1.68 sec) and rotary atomizing wet scrubber	120
115	115	Kona Community Hospital		Kealahou	HI	SR	E	CC	Comb ctrl	Secondary chamber (1900F, 2 sec), no APCD	200
116	116	Yukon-Kuskokwim Delta Regional Hospital		Bethel	AK	SR	E	CC	Comb ctrl	Secondary chamber, no APCD	50
<b>Total nationwide</b>											

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Stack gas flow rate (dscfm)	Stack gas temperature (°F)	Operating hours (hr/yr)	Autoclave secondary impacts					
							Energy impacts, MMBtu/yr	PM secondary emissions, lb/yr	CO secondary emissions, lb/yr	NO <sub>x</sub> secondary emissions, lb/yr	SO <sub>2</sub> secondary emissions, lb/yr	Total secondary emissions, lb/yr
1	1	Bristol-Myers Squibb Co.		1,648	217	2,072	1,107	18	132	67	130	346
5	5	Merck & Company, Inc.		7,346	246	4,321	1,107	18	132	67	130	346
15	15--1	Curtis Bay Energy	Unit 1	27,698	296	8,736	1,107	18	132	67	130	346
15	15--2	Curtis Bay Energy	Unit 2	30,578	303	8,736	1,107	18	132	67	130	346
20	20--1	Fort Detrick	Unit 5	2,424	87	1,300	1,107	18	132	67	130	346
20	20--2	Fort Detrick	Unit 6	2,308	92	1,300	1,107	18	132	67	130	346
29	29	Hamot Medical Center		3,701	122	2,080	1,107	18	132	67	130	346
36	36--1	Merck & Company, Inc.	Unit 2	5,235	358	865	1,107	18	132	67	130	346
36	36--2	Merck & Company, Inc.	Unit 5	8,119	304	5,753	1,107	18	132	67	130	346
40	40	Charleston Area Medical Center, General Hospital		4,323	312	1,248	1,107	18	132	67	130	346
42	42	Stericycle, Inc.		7,008	327	7,951	1,107	18	132	67	130	346
43	43	Boca Raton Community Hospital		2,078	91	8,736	1,107	18	132	67	130	346
44	44	Bethesda Memorial Hospital		4,537	106	3,024	1,107	18	132	67	130	346
46	46	Holy Cross Hospital		3,378	124	2,964	1,107	18	132	67	130	346
48	48	Memorial Regional Hospital		4,568	143	4,992	1,107	18	132	67	130	346
51	51	Lakeland Regional Medical Center		3,323	212	6,247	1,107	18	132	67	130	346
54	54	Bayfront Medical Center		2,898	133	3,352	1,107	18	132	67	130	346
55	55	St. Joseph's Hospital		3,347	400	8,008	1,107	18	132	67	130	346
59	59--1	Stericycle, Inc.	Unit 1	4,002	135	8,400	1,107	18	132	67	130	346
59	59--2	Stericycle, Inc.	Unit 2	3,917	138	8,400	1,107	18	132	67	130	346
60	60--1	BMWNC, Inc.	Unit 1	6,763	343	7,456	1,107	18	132	67	130	346

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Stack gas flow rate (dscfm)	Stack gas temperature (°F)	Operating hours (hr/yr)	Autoclave secondary impacts					Total secondary emissions, lb/yr
							Energy impacts, MMBtu/yr	PM secondary emissions, lb/yr	CO secondary emissions, lb/yr	NO <sub>x</sub> secondary emissions, lb/yr	SO <sub>2</sub> secondary emissions, lb/yr	
65	65-1	Stericycle, Inc.	Unit 1	3,304	143	7,665	1,107	18	132	67	130	346
65	65-2	Stericycle, Inc.	Unit 2	3,125	141	7,558	1,107	18	132	67	130	346
71	71	Loyola University Medical Center		3,526	156	4,800	1,107	18	132	67	130	346
77	77	Parkview Hospital		2,766	114	8,395	1,107	18	132	67	130	346
84	84	Mayo Clinic, Waste Management Facility		6,516	294	6,240	1,107	18	132	67	130	346
87	87	MedCentral Health System, Mansfield Hospital		2,351	260	3,120	1,107	18	132	67	130	346
94	94	Stericycle, Inc.		2,737	138	7,904	1,107	18	132	67	130	346
98	98-1	University of Texas Medical Branch		4,534	111	5,328	1,107	18	132	67	130	346
106	106	Stericycle, Inc.		3,590	152	8,760	1,107	18	132	67	130	346
109	109	Healthcare Environmental Services Inc.		4,478	302	1,872	1,107	18	132	67	130	346
110	110	Stericycle, Inc.		6,291	126	7,309	1,107	18	132	67	130	346
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	10,031	296	7,896	1,107	18	132	67	130	346
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	9,028	291	7,896	1,107	18	132	67	130	346
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		3,124	125	625	1,107	18	132	67	130	346
130	130	Department of Veterans Affairs Medical Center		6,422	155	4,160	1,107	18	132	67	130	346
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		1,972	189	1,440	136	2.2	16	8.2	16	42
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		1,890	179	1,350	136	2.2	16	8.2	16	42
18	18	Franklin Square Hospital Center		2,999	54	5,408	136	2.2	16	8.2	16	42
21	21	Washington County Hospital		1,834	112	2,496	136	2.2	16	8.2	16	42
25	25	Holy Spirit Hospital		1,702	99	3,944	136	2.2	16	8.2	16	42
30	30	Riddle Memorial Hospital		1,730	239	2,920	136	2.2	16	8.2	16	42
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		2,117	175	1,022	136	2.2	16	8.2	16	42
38	38	Wilkes-Barre General Hospital		2,063	274	4,472	136	2.2	16	8.2	16	42
41	41	Thomas Memorial Hospital		1,526	146	2,080	136	2.2	16	8.2	16	42
47	47	Malcolm Randall Veterans Affairs Medical Center		1,645	115	1,664	136	2.2	16	8.2	16	42

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Stack gas flow rate (dscfm)	Stack gas temperature (°F)	Operating hours (hr/yr)	Autoclave secondary impacts					
							Energy impacts, MMBtu/yr	PM secondary emissions, lb/yr	CO secondary emissions, lb/yr	NO <sub>x</sub> secondary emissions, lb/yr	SO <sub>2</sub> secondary emissions, lb/yr	Total secondary emissions, lb/yr
63	63	St. Jude Children's Research Hospital		2,333	276	1,050	136	2.2	16	8.2	16	42
81	81	South Bend Medical Foundation		2,325	121	2,028	136	2.2	16	8.2	16	42
82	82	Good Samaritan Hospital		1,352	128	2,574	136	2.2	16	8.2	16	42
88	88	Medina General Hospital		1,153	100	3,016	136	2.2	16	8.2	16	42
95	95	St. Joseph's Hospital		1,634	223	1,404	136	2.2	16	8.2	16	42
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	1,790	112	1,248	136	2.2	16	8.2	16	42
111	111	Wyoming Medical Center		1,505	130	989	136	2.2	16	8.2	16	42
86	86	Fairfield Medical Center		1,095	97	5,018	102	1.7	12	6.1	12	32
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	715	163	2,920	102	1.7	12	6.1	12	32
115	115	Kona Community Hospital		684	1,787	1,430	38	0.6	4.5	2.3	4.5	12
116	116	Yukon-Kuskokwim Delta Regional Hospital		559	1,457	1,560	38	0.6	4.5	2.3	4.5	12
<b>Total nationwide</b>							<b>42,433</b>	<b>692</b>	<b>5,042</b>	<b>2,550</b>	<b>4,978</b>	<b>13,261</b>

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Landfill secondary impacts				HCl unit average (ppmvd)	CO unit average (ppmvd)	Pb unit average (mg/dscm)	Cd unit average (mg/dscm)	Hg unit average (mg/dscm)	PM unit average (gr/dscf)	CDD/CDF unit average (ng/dscm)	TEQ unit average (ng/dscm)	NO <sub>x</sub> unit average (ppmvd)
				Solid waste impacts, tpy	CH <sub>4</sub> secondary emissions, tpy	Hg secondary emissions, lb/yr	Total secondary emissions, tpy									
1	1	Bristol-Myers Squibb Co.		69	16	0.0009	16	65.7	0.983	0.319	0.00364	0.000695	0.00180	36.9	0.659	119
5	5	Merck & Company, Inc.		116	16	0.0009	16	0.780	1.41	0.0155	0.00265	0.00353	0.00330	12.8	0.110	112
15	15--1	Curtis Bay Energy	Unit 1	2,073	16	0.0009	16	85.2	1.26	0.00504	0.000887	0.174	0.00823	27.7	0.451	187
15	15--2	Curtis Bay Energy	Unit 2	2,073	16	0.0009	16	76.9	2.91	0.00769	0.00130	0.300	0.00407	5.47	0.115	180
20	20--1	Fort Detrick	Unit 5	44	16	0.0009	16	0.190	0.871	0.126	0.00992	0.00324	0.00721	85.2	0.762	121
20	20--2	Fort Detrick	Unit 6	44	16	0.0009	16	0.353	1.17	0.182	0.00867	0.00771	0.00775	97.3	1.26	121
29	29	Hamot Medical Center		74	16	0.0009	16	16.6	2.60	0.00675	0.00119	0.00400	0.00174	7.72	0.0879	131
36	36--1	Merck & Company, Inc.	Unit 2	58	16	0.0009	16	4.22	2.46	0.00115	0.000853	0.00305	0.00156	3.71	0.0442	99.8
36	36--2	Merck & Company, Inc.	Unit 5	587	16	0.0009	16	3.75	1.07	0.0109	0.00242	0.0141	0.00255	6.78	0.308	94.4
40	40	Charleston Area Medical Center, General Hospital		42	16	0.0009	16	26.6	11.3	0.00468	0.00186	0.00418	0.00106	1.31	0.0153	92.7
42	42	Stericycle, Inc.		506	16	0.0009	16	27.1	10.7	0.0434	0.00886	0.0132	0.00203	24.3	0.748	149
43	43	Boca Raton Community Hospital		214	16	0.0009	16	0.986	6.46	0.0883	0.00537	0.0119	0.0104	67.7	0.852	121
44	44	Bethesda Memorial Hospital		101	16	0.0009	16	0.608	2.74	0.0774	0.00929	0.0739	0.00960	54.3	1.21	88.3
46	46	Holy Cross Hospital		129	16	0.0009	16	1.18	4.91	0.0618	0.0168	0.0504	0.0103	37.5	2.23	67.9
48	48	Memorial Regional Hospital		301	16	0.0009	16	1.02	1.17	0.0928	0.00560	0.00374	0.00973	48.3	1.29	142
51	51	Lakeland Regional Medical Center		157	16	0.0009	16	2.68	6.35	0.0348	0.00365	0.00244	0.00254	68.2	1.29	77.1
54	54	Bayfront Medical Center		168	16	0.0009	16	0.947	9.36	0.0976	0.00379	0.00128	0.00543	46.6	0.819	140
55	55	St. Joseph's Hospital		402	16	0.0009	16	12.5	5.85	0.0740	0.00205	0.00730	0.00111	66.2	1.35	123
59	59--1	Stericycle, Inc.	Unit 1	538	16	0.0009	16	4.24	3.95	0.206	0.0233	0.0389	0.00714	2.82	0.0664	121
59	59--2	Stericycle, Inc.	Unit 2	538	16	0.0009	16	3.88	4.61	0.206	0.0188	0.118	0.0102	5.48	0.0845	121
60	60--1	BMWNC, Inc.	Unit 1	375	16	0.0009	16	38.8	15.1	0.00335	0.000532	0.0598	0.00504	6.10	0.149	104

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Landfill secondary impacts				HCl unit average (ppmvd)	CO unit average (ppmvd)	Pb unit average (mg/dscm)	Cd unit average (mg/dscm)	Hg unit average (mg/dscm)	PM unit average (gr/dscf)	CDD/CDF unit average (ng/dscm)	TEQ unit average (ng/dscm)	NO <sub>x</sub> unit average (ppmvd)
				Solid waste impacts, tpy	CH <sub>4</sub> secondary emissions, tpy	Hg secondary emissions, lb/yr	Total secondary emissions, tpy									
65	65-1	Stericycle, Inc.	Unit 1	385	16	0.0009	16	1.12	12.9	0.200	0.00572	0.415	0.00921	1.24	0.0105	121
65	65-2	Stericycle, Inc.	Unit 2	380	16	0.0009	16	1.43	5.77	0.134	0.0123	0.377	0.00878	0.837	0.0126	121
71	71	Loyola University Medical Center		265	16	0.0009	16	2.22	7.07	0.178	0.0152	0.0183	0.0105	67.9	0.630	107
77	77	Parkview Hospital		337	16	0.0009	16	2.68	5.90	0.177	0.0802	0.00623	0.0109	7.10	0.0898	121
84	84	Mayo Clinic, Waste Management Facility		418	16	0.0009	16	15.2	2.24	0.291	0.0101	0.0445	0.0137	0.357	0.0117	176
87	87	MedCentral Health System, Mansfield Hospital		63	16	0.0009	16	24.8	4.81	0.0415	0.00113	0.00898	0.00357	29.8	0.560	121
94	94	Stericycle, Inc.		371	16	0.0009	16	0.661	4.45	0.244	0.00524	0.239	0.00617	14.7	0.341	121
98	98-1	University of Texas Medical Branch		268	16	0.0009	16	2.12	1.73	0.756	0.00298	0.0482	0.0147	98.1	1.06	78.9
106	106	Stericycle, Inc.		440	16	0.0009	16	0.567	4.62	0.127	0.00396	0.375	0.00828	2.40	0.0176	121
109	109	Healthcare Environmental Services Inc.		106	16	0.0009	16	72.5	14.7	0.0171	0.00296	0.129	0.00611	16.0	1.95	207
110	110	Stericycle, Inc.		474	16	0.0009	16	3.93	7.39	0.0309	0.00214	0.0746	0.00449	3.37	0.0824	228
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1,102	16	0.0009	16	11.0	3.96	0.0187	0.00132	0.0130	0.00702	0.498	0.00807	72.4
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	1,102	16	0.0009	16	5.30	2.86	0.00778	0.000889	0.00559	0.00947	0.152	0.00378	88.4
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		21	16	0.0009	16	1.58	10.7	0.000296	0.000106	0.00164	0.00323	0.380	0.00532	66.9
130	130	Department of Veterans Affairs Medical Center		139	16	0.0009	16	8.32	1.00	0.0435	0.00564	0.00542	0.0111	0.665	0.0160	81.5
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		24	1.8	0.0001	1.8	0.708	1.50	0.973	0.122	0.0405	0.0126	1.06	0.0509	99.8
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		14	1.8	0.0001	1.8	1.39	11.8	0.331	0.0472	0.00395	0.0294	6.98	0.151	87.9
18	18	Franklin Square Hospital Center		91	1.8	0.0001	1.8	1.48	5.363	0.262	0.0474	0.00270	0.0256	91.4	0.996	84.7
21	21	Washington County Hospital		42	1.8	0.0001	1.8	6.26	6.62	0.164	0.0139	0.000836	0.0197	76.2	1.32	105
25	25	Holy Spirit Hospital		66	1.8	0.0001	1.8	0.736	1.88	0.155	0.0439	0.00346	0.0164	3.47	0.0299	105
30	30	Riddle Memorial Hospital		49	1.8	0.0001	1.8	2.10	1.41	0.178	0.00366	0.0108	0.0124	78.2	1.42	124
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		17	1.8	0.0001	1.8	1.27	2.11	0.151	0.00408	0.00124	0.0239	0.0973	0.00291	105
38	38	Wilkes-Barre General Hospital		60	1.8	0.0001	1.8	8.95	2.08	0.00406	0.00106	0.00927	0.00399	16.3	0.193	105
41	41	Thomas Memorial Hospital		33	1.8	0.0001	1.8	2.62	0.946	0.723	0.0297	0.109	0.0261	0.175	0.00424	94.4
47	47	Malcolm Randall Veterans Affairs Medical Center		28	1.8	0.0001	1.8	4.69	11.6	0.227	0.0877	0.0195	0.0173	4.48	0.111	148



**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	SO <sub>2</sub> unit average (ppmvd)	MACT floor HCl limit (ppmvd)	MACT floor CO limit (ppmvd)	MACT floor Pb limit (mg/dscm)	MACT floor Cd limit (mg/dscm)	MACT floor Hg limit (mg/dscm)	MACT floor PM limit (gr/dscf)	MACT floor CDD/CDF limit (ng/dscm)	MACT floor TEQ limit (ng/dscm)	MACT floor NO <sub>x</sub> limit (ppmvd)	MACT floor SO <sub>2</sub> limit (ppmvd)
1	1	Bristol-Myers Squibb Co.		29.9	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
5	5	Merck & Company, Inc.		2.72	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
15	15--1	Curtis Bay Energy	Unit 1	23.0	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
15	15--2	Curtis Bay Energy	Unit 2	34.7	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
20	20--1	Fort Detrick	Unit 5	2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
20	20--2	Fort Detrick	Unit 6	2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
29	29	Hamot Medical Center		2.78	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
36	36--1	Merck & Company, Inc.	Unit 2	1.13	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
36	36--2	Merck & Company, Inc.	Unit 5	2.35	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
40	40	Charleston Area Medical Center, General Hospital		2.07	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
42	42	Stericycle, Inc.		1.50	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
43	43	Boca Raton Community Hospital		2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
44	44	Bethesda Memorial Hospital		4.62	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
46	46	Holy Cross Hospital		1.16	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
48	48	Memorial Regional Hospital		3.41	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
51	51	Lakeland Regional Medical Center		2.13	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
54	54	Bayfront Medical Center		1.25	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
55	55	St. Joseph's Hospital		2.52	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
59	59--1	Stericycle, Inc.	Unit 1	2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
59	59--2	Stericycle, Inc.	Unit 2	2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
60	60--1	BMWNC, Inc.	Unit 1	7.03	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	SO <sub>2</sub> unit average (ppmvd)	MACT floor HCl limit (ppmvd)	MACT floor CO limit (ppmvd)	MACT floor Pb limit (mg/dscm)	MACT floor Cd limit (mg/dscm)	MACT floor Hg limit (mg/dscm)	MACT floor PM limit (gr/dscf)	MACT floor CDD/CDF limit (ng/dscm)	MACT floor TEQ limit (ng/dscm)	MACT floor NO <sub>x</sub> limit (ppmvd)	MACT floor SO <sub>2</sub> limit (ppmvd)
65	65-1	Stericycle, Inc.	Unit 1	2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
65	65-2	Stericycle, Inc.	Unit 2	2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
71	71	Loyola University Medical Center		0.819	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
77	77	Parkview Hospital		2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
84	84	Mayo Clinic, Waste Management Facility		1.45	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
87	87	MedCentral Health System, Mansfield Hospital		9.27	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
94	94	Stericycle, Inc.		2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
98	98-1	University of Texas Medical Branch		1.12	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
106	106	Stericycle, Inc.		2.85	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
109	109	Healthcare Environmental Services Inc.		20.2	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
110	110	Stericycle, Inc.		3.35	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1.21	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	0.462	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		1.45	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
130	130	Department of Veterans Affairs Medical Center		7.58	2.4	3.9	0.013	0.0041	0.0095	0.0056	1.6	0.029	140	2.8
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		0.469	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		2.88	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
18	18	Franklin Square Hospital Center		10.9	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
21	21	Washington County Hospital		3.52	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
25	25	Holy Spirit Hospital		3.52	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
30	30	Riddle Memorial Hospital		0.336	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		1.22	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
38	38	Wilkes-Barre General Hospital		1.90	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
41	41	Thomas Memorial Hospital		2.46	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8
47	47	Malcolm Randall Veterans Affairs Medical Center		2.54	2.5	3	0.017	0.0071	0.0079	0.012	0.63	0.0097	200	2.8



**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Meets HCl Limit	Meets CO Limit	Meets Pb Limit	Meets Cd Limit	Meets Hg Limit	Meets PM Limit	Meets Total CDD/CDF Limit	Meets CDD/CDF TEQ Limit	Meets CDD/CDF Limit (Total or TEQ)	Meets NO <sub>x</sub> Limit	Meets SO <sub>2</sub> Limit	HCl % Improvement Needed	MACT floor HCl control
1	1	Bristol-Myers Squibb Co.		1	0	1	0	0	0	1	1	1	0	1	2636%	add packed-bed scrubber
5	5	Merck & Company, Inc.		0	0	1	0	0	0	1	1	1	0	0	-67%	none
15	15--1	Curtis Bay Energy	Unit 1	1	0	0	0	1	1	1	1	1	1	1	3450%	add packed-bed scrubber
15	15--2	Curtis Bay Energy	Unit 2	1	0	0	0	1	0	1	1	1	1	1	3104%	add packed-bed scrubber
20	20--1	Fort Detrick	Unit 5	0	0	1	1	0	1	1	1	1	0	1	-92%	none
20	20--2	Fort Detrick	Unit 6	0	0	1	1	0	1	1	1	1	0	1	-85%	none
29	29	Hamot Medical Center		1	0	0	0	0	0	1	1	1	0	0	592%	add packed-bed scrubber
36	36--1	Merck & Company, Inc.	Unit 2	1	0	0	0	0	0	1	1	1	0	0	76%	add packed-bed scrubber
36	36--2	Merck & Company, Inc.	Unit 5	1	0	0	0	1	0	1	1	1	0	0	56%	add packed-bed scrubber
40	40	Charleston Area Medical Center, General Hospital		1	1	0	0	0	0	0	0	0	0	0	1010%	add packed-bed scrubber
42	42	Stericycle, Inc.		1	1	1	1	1	0	1	1	1	1	0	1031%	add packed-bed scrubber
43	43	Boca Raton Community Hospital		0	1	1	1	1	1	1	1	1	0	1	-59%	none
44	44	Bethesda Memorial Hospital		0	0	1	1	1	1	1	1	1	0	1	-75%	none
46	46	Holy Cross Hospital		0	1	1	1	1	1	1	1	1	0	0	-51%	none
48	48	Memorial Regional Hospital		0	0	1	1	0	1	1	1	1	1	1	-58%	none
51	51	Lakeland Regional Medical Center		1	1	1	0	0	0	1	1	1	0	0	12%	increase lime
54	54	Bayfront Medical Center		0	1	1	0	0	0	1	1	1	1	0	-61%	none
55	55	St. Joseph's Hospital		1	1	1	0	0	0	1	1	1	0	0	422%	add packed-bed scrubber
59	59--1	Stericycle, Inc.	Unit 1	1	1	1	1	1	1	1	1	1	0	1	76%	add caustic
59	59--2	Stericycle, Inc.	Unit 2	1	1	1	1	1	1	1	1	1	0	1	62%	add caustic
60	60--1	BMWNC, Inc.	Unit 1	1	1	0	0	1	0	1	1	1	0	1	1516%	add packed-bed scrubber

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Meets HCl Limit	Meets CO Limit	Meets Pb Limit	Meets Cd Limit	Meets Hg Limit	Meets PM Limit	Meets Total CDD/CDF Limit	Meets CDD/CDF TEQ Limit	Meets CDD/CDF Limit (Total or TEQ)	Meets NO <sub>x</sub> Limit	Meets SO <sub>2</sub> Limit	HCl % Improvement Needed	MACT floor HCl control
65	65-1	Stericycle, Inc.	Unit 1	0	1	1	1	1	1	0	0	0	0	1	-53%	none
65	65-2	Stericycle, Inc.	Unit 2	0	1	1	1	1	1	0	0	0	0	1	-40%	none
71	71	Loyola University Medical Center		0	1	1	1	1	1	1	1	1	0	0	-7.6%	none
77	77	Parkview Hospital		1	1	1	1	0	1	1	1	1	0	1	12%	increase caustic
84	84	Mayo Clinic, Waste Management Facility		1	0	1	1	1	1	0	0	0	1	0	535%	add packed-bed scrubber
87	87	MedCentral Health System, Mansfield Hospital		1	1	1	0	0	0	1	1	1	0	1	934%	add packed-bed scrubber
94	94	Stericycle, Inc.		0	1	1	1	1	1	1	1	1	0	1	-72%	none
98	98-1	University of Texas Medical Branch		0	0	1	0	1	1	1	1	1	0	0	-11%	none
106	106	Stericycle, Inc.		0	1	1	0	1	1	1	0	0	0	1	-76%	none
109	109	Healthcare Environmental Services Inc.		1	1	1	0	1	1	1	1	1	1	1	2919%	add packed-bed scrubber
110	110	Stericycle, Inc.		1	1	1	0	1	0	1	1	1	1	1	64%	increase sodium bicarbonate
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1	1	1	0	1	1	0	0	0	0	0	360%	add packed-bed scrubber
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	1	0	0	0	0	1	0	0	0	0	0	121%	add packed-bed scrubber
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		0	1	0	0	0	0	0	0	0	0	0	-34%	none
130	130	Department of Veterans Affairs Medical Center		1	0	1	1	0	1	0	0	0	0	1	247%	add caustic
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		0	0	1	1	1	1	1	1	1	0	0	-72%	none
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		0	1	1	1	0	1	1	1	1	0	1	-45%	none
18	18	Franklin Square Hospital Center		0	1	1	1	0	1	1	1	1	0	1	-41%	none
21	21	Washington County Hospital		1	1	1	1	0	1	1	1	1	0	1	150%	add packed-bed scrubber
25	25	Holy Spirit Hospital		0	0	1	1	0	1	1	1	1	0	1	-71%	none
30	30	Riddle Memorial Hospital		0	0	1	0	1	1	1	1	1	0	0	-16%	none
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		0	0	1	0	0	1	0	0	0	0	0	-49%	none
38	38	Wilkes-Barre General Hospital		1	0	0	0	1	0	1	1	1	0	0	258%	add packed-bed scrubber
41	41	Thomas Memorial Hospital		1	0	1	1	1	1	0	0	0	0	0	5.0%	add caustic
47	47	Malcolm Randall Veterans Affairs Medical Center		1	1	1	1	1	1	1	1	1	0	0	88%	add packed-bed scrubber



**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	CO % Improvement Needed	MACT floor CO control	Pb % Improvement Needed	MACT floor Pb control	Cd % Improvement Needed	MACT floor Cd control	Hg % Improvement Needed	MACT floor Hg control	PM % Improvement Needed	MACT floor PM control
1	1	Bristol-Myers Squibb Co.		-75%	none	2352%	replace FF	-11%	none	-93%	none	-68%	none
5	5	Merck & Company, Inc.		-64%	none	19%	improve FF performance	-35%	none	-63%	none	-41%	none
15	15--1	Curtis Bay Energy	Unit 1	-68%	none	-61%	none	-78%	none	1735%	add ACI	47%	improve FF performance
15	15--2	Curtis Bay Energy	Unit 2	-25%	none	-41%	none	-68%	none	3059%	add ACI	-27%	none
20	20--1	Fort Detrick	Unit 5	-78%	none	872%	add FF	142%	add FF	-66%	none	29%	add FF
20	20--2	Fort Detrick	Unit 6	-70%	none	1301%	add FF	111%	add FF	-19%	none	38%	add FF
29	29	Hamot Medical Center		-33%	none	-48%	none	-71%	none	-58%	none	-69%	none
36	36--1	Merck & Company, Inc.	Unit 2	-37%	none	-91%	none	-79%	none	-68%	none	-72%	none
36	36--2	Merck & Company, Inc.	Unit 5	-73%	none	-16%	none	-41%	none	49%	add ACI	-54%	none
40	40	Charleston Area Medical Center, General Hospital		190%	increase natural gas	-64%	none	-55%	none	-56%	none	-81%	none
42	42	Stericycle, Inc.		175%	secondary chamber retrofit	234%	replace FF	116%	replace FF	39%	increase activated carbon	-64%	none
43	43	Boca Raton Community Hospital		66%	secondary chamber retrofit	579%	add FF	31%	add FF	25%	add ACI	86%	add FF
44	44	Bethesda Memorial Hospital		-30%	none	495%	add FF	127%	add FF	678%	add ACI	71%	add FF
46	46	Holy Cross Hospital		26%	increase natural gas	375%	add FF	310%	add FF	430%	add ACI	84%	add FF
48	48	Memorial Regional Hospital		-70%	none	614%	add FF	37%	increase pressure drop	-61%	none	74%	add FF
51	51	Lakeland Regional Medical Center		63%	secondary chamber retrofit	168%	replace FF	-11%	none	-74%	none	-55%	none
54	54	Bayfront Medical Center		140%	secondary chamber retrofit	651%	add FF	-7.4%	none	-87%	none	-3.0%	none
55	55	St. Joseph's Hospital		50%	increase natural gas	469%	replace FF	-50%	none	-23%	none	-80%	none
59	59--1	Stericycle, Inc.	Unit 1	1.2%	increase natural gas	1482%	add FF	468%	add FF	309%	add ACI	27%	add FF
59	59--2	Stericycle, Inc.	Unit 2	18%	increase natural gas	1483%	add FF	359%	add FF	1141%	add ACI	82%	add FF
60	60--1	BMWNC, Inc.	Unit 1	287%	secondary chamber retrofit	-74%	none	-87%	none	529%	increase activated carbon	-10%	none

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	CO % Improvement Needed	MACT floor CO control	Pb % Improvement Needed	MACT floor Pb control	Cd % Improvement Needed	MACT floor Cd control	Hg % Improvement Needed	MACT floor Hg control	PM % Improvement Needed	MACT floor PM control
65	65-1	Stericycle, Inc.	Unit 1	231%	secondary chamber retrofit	1442%	add FF	39%	add FF	4265%	add ACI	65%	add FF
65	65-2	Stericycle, Inc.	Unit 2	48%	increase natural gas	934%	add FF	200%	add FF	3866%	add ACI	57%	add FF
71	71	Loyola University Medical Center		81%	secondary chamber retrofit	1266%	add FF	272%	add FF	93%	add ACI	87%	add FF
77	77	Parkview Hospital		51%	increase natural gas	1264%	add FF	1855%	add FF	-34%	none	95%	add FF
84	84	Mayo Clinic, Waste Management Facility		-42%	none	2137%	replace FF	146%	replace FF	368%	increase activated carbon	144%	replace FF
87	87	MedCentral Health System, Mansfield Hospital		23%	increase natural gas	219%	replace FF	-72%	none	-5.5%	none	-36%	none
94	94	Stericycle, Inc.		14%	increase natural gas	1776%	add FF	28%	add FF	2419%	add ACI	10%	increase pressure drop
98	98-1	University of Texas Medical Branch		-56%	none	5714%	add FF	-27%	none	407%	increase activated carbon	163%	add FF
106	106	Stericycle, Inc.		18%	increase natural gas	876%	add FF	-3.4%	none	3852%	add ACI	48%	add FF
109	109	Healthcare Environmental Services Inc.		278%	secondary chamber retrofit	31%	replace FF	-28%	none	1255%	increase activated carbon	9.1%	improve FF performance
110	110	Stericycle, Inc.		89%	secondary chamber retrofit	137%	add FF	-48%	none	686%	increase activated carbon	-20%	none
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1.6%	increase natural gas	44%	replace FF	-68%	none	37%	increase activated carbon	25%	replace FF
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	-27%	none	-40%	none	-78%	none	-41%	none	69%	replace FF
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		173%	secondary chamber retrofit	-98%	none	-97%	none	-83%	none	-42%	none
130	130	Department of Veterans Affairs Medical Center		-74%	none	234%	add FF	38%	add FF	-43%	none	98%	add FF
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		-50%	none	5622%	add FF	1622%	add FF	413%	add ACI	5.1%	increase pressure drop
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		293%	secondary chamber retrofit	1846%	add FF	565%	add FF	-50%	none	145%	add FF
18	18	Franklin Square Hospital Center		79%	secondary chamber retrofit	1441%	add FF	568%	add FF	-66%	none	113%	add FF
21	21	Washington County Hospital		121%	secondary chamber retrofit	863%	add FF	95%	add FF	-89%	none	64%	add FF
25	25	Holy Spirit Hospital		-37%	none	812%	add FF	518%	add FF	-56%	none	37%	add FF
30	30	Riddle Memorial Hospital		-53%	none	948%	add FF	-48%	none	36%	increase activated carbon	3.4%	increase pressure drop
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		-30%	none	786%	add FF	-43%	none	-84%	none	99%	add FF
38	38	Wilkes-Barre General Hospital		-31%	none	-76%	none	-85%	none	17%	increase activated carbon	-67%	none
41	41	Thomas Memorial Hospital		-68%	none	4154%	add FF	319%	add FF	1277%	add ACI	118%	add FF
47	47	Malcolm Randall Veterans Affairs Medical Center		286%	secondary chamber retrofit	1237%	add FF	1136%	add FF	147%	add ACI	44%	add FF



**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Total CDD/CDF % Improvement Needed	MACT floor CDD/CDF control	CDD/CDF TEQ % Improvement Needed	MACT floor TEQ control	NO <sub>x</sub> % Improvement Needed	MACT floor NO <sub>x</sub> control	SO <sub>2</sub> % Improvement Needed	MACT floor SO <sub>2</sub> control
1	1	Bristol-Myers Squibb Co.		2204%	add ACI	2174%	add ACI	-15%	none	968%	add packed-bed scrubber
5	5	Merck & Company, Inc.		701%	add ACI	278%	add ACI	-20%	none	-3.0%	none
15	15--1	Curtis Bay Energy	Unit 1	1629%	add ACI	1454%	add ACI	34%	add SNCR	721%	add packed-bed scrubber
15	15--2	Curtis Bay Energy	Unit 2	242%	add ACI	297%	add ACI	28%	add SNCR	1141%	add packed-bed scrubber
20	20--1	Fort Detrick	Unit 5	5223%	add ACI	2529%	add ACI	-14%	none	2%	add caustic
20	20--2	Fort Detrick	Unit 6	5981%	add ACI	4255%	add ACI	-14%	none	2%	add caustic
29	29	Hamot Medical Center		383%	increase activated carbon	203%	increase activated carbon	-6.3%	none	-0.9%	none
36	36--1	Merck & Company, Inc.	Unit 2	132%	add ACI	52%	add ACI	-29%	none	-60%	none
36	36--2	Merck & Company, Inc.	Unit 5	324%	add ACI	961%	add ACI	-33%	none	-16%	none
40	40	Charleston Area Medical Center, General Hospital		-18%	none	-47%	none	-34%	none	-26%	none
42	42	Stericycle, Inc.		1417%	increase activated carbon	2478%	increase activated carbon	6.6%	minor adjustment (marginal difference in NO <sub>x</sub> )	-46%	none
43	43	Boca Raton Community Hospital		4133%	add ACI	2838%	add ACI	-14%	none	2%	add caustic
44	44	Bethesda Memorial Hospital		3292%	add ACI	4059%	add ACI	-37%	none	65%	add caustic
46	46	Holy Cross Hospital		2246%	add ACI	7573%	add ACI	-52%	none	-58%	none
48	48	Memorial Regional Hospital		2922%	add ACI	4345%	add ACI	1.3%	minor adjustment (marginal difference in NO <sub>x</sub> )	22%	add caustic
51	51	Lakeland Regional Medical Center		4163%	add ACI	4346%	add ACI	-45%	none	-24%	none
54	54	Bayfront Medical Center		2810%	add ACI	2725%	add ACI	0.2%	minor adjustment (marginal difference in NO <sub>x</sub> )	-55%	none
55	55	St. Joseph's Hospital		4035%	add ACI	4558%	add ACI	-12%	none	-10%	none
59	59--1	Stericycle, Inc.	Unit 1	76%	add ACI	129%	add ACI	-14%	none	2%	add caustic
59	59--2	Stericycle, Inc.	Unit 2	243%	add ACI	191%	add ACI	-14%	none	2%	add caustic
60	60--1	BMWNC, Inc.	Unit 1	281%	increase activated carbon	413%	increase activated carbon	-26%	none	151%	add packed-bed scrubber

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Total CDD/CDF % Improvement Needed	MACT floor CDD/CDF control	CDD/CDF TEQ % Improvement Needed	MACT floor TEQ control	NO <sub>x</sub> % Improvement Needed	MACT floor NO <sub>x</sub> control	SO <sub>2</sub> % Improvement Needed	MACT floor SO <sub>2</sub> control
65	65-1	Stericycle, Inc.	Unit 1	-23%	none	-64%	none	-14%	none	2%	add caustic
65	65-2	Stericycle, Inc.	Unit 2	-48%	none	-57%	none	-14%	none	2%	add caustic
71	71	Loyola University Medical Center		4144%	add ACI	2073%	add ACI	-24%	none	-71%	none
77	77	Parkview Hospital		344%	add ACI	210%	add ACI	-14%	none	2%	add caustic
84	84	Mayo Clinic, Waste Management Facility		-78%	none	-60%	none	26%	add SNCR	-48%	none
87	87	MedCentral Health System, Mansfield Hospital		1763%	increase activated carbon	1832%	increase activated carbon	-14%	none	231%	add packed-bed scrubber
94	94	Stericycle, Inc.		821%	add ACI	1078%	add ACI	-14%	none	2%	add caustic
98	98-1	University of Texas Medical Branch		6034%	increase activated carbon	3542%	increase activated carbon	-44%	none	-60%	none
106	106	Stericycle, Inc.		50%	none (meets TEQ)	-39%	none	-14%	none	2%	add caustic
109	109	Healthcare Environmental Services Inc.		900%	increase activated carbon	6630%	increase activated carbon	48%	add SNCR	620%	add packed-bed scrubber
110	110	Stericycle, Inc.		110%	increase activated carbon	184%	increase activated carbon	63%	add SNCR	20%	increase sodium bicarbonate
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	-69%	none	-72%	none	-48%	none	-57%	none
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	-91%	none	-87%	none	-37%	none	-84%	none
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		-76%	none	-82%	none	-52%	none	-48%	none
130	130	Department of Veterans Affairs Medical Center		-58%	none	-45%	none	-42%	none	171%	add caustic
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		68%	add ACI	425%	add ACI	-50%	none	-83%	none
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		1008%	add ACI	1456%	add ACI	-56%	none	2.9%	add caustic
18	18	Franklin Square Hospital Center		14401%	add ACI	10163%	add ACI	-58%	none	288%	add packed-bed scrubber
21	21	Washington County Hospital		11994%	add ACI	13471%	add ACI	-47%	none	26%	add packed-bed scrubber
25	25	Holy Spirit Hospital		451%	add ACI	209%	add ACI	-47%	none	26%	add caustic
30	30	Riddle Memorial Hospital		12319%	increase activated carbon	14500%	increase activated carbon	-38%	none	-88%	none
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		-85%	none	-70%	none	-47%	none	-56%	none
38	38	Wilkes-Barre General Hospital		2487%	increase activated carbon	1885%	increase activated carbon	-47%	none	-32%	none
41	41	Thomas Memorial Hospital		-72%	none	-56%	none	-53%	none	-12%	none
47	47	Malcolm Randall Veterans Affairs Medical Center		612%	add ACI	1040%	add ACI	-26%	none	-9.4%	none



**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Consolidated MACT floor controls	APCD code with MACT floor controls	MACT floor energy impacts, MMBtu/yr						
						Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor energy impacts
1	1	Bristol-Myers Squibb Co.		replace FF with DIFF; add packed-bed scrubber and ACI	DIFF/WS	287	0					287
5	5	Merck & Company, Inc.		improve FF performance, add ACI	DIFF							0
15	15--1	Curtis Bay Energy	Unit 1	improve FF performance; add packed-bed scrubber, ACI, and SNCR	DIFF/WS	287				3.6		290
15	15--2	Curtis Bay Energy	Unit 2	add packed-bed scrubber, ACI, and SNCR	DIFF/WS	287				3.6		290
20	20--1	Fort Detrick	Unit 5	add DIFF, caustic, and ACI	DIFF/WS		537					537
20	20--2	Fort Detrick	Unit 6	add DIFF, caustic, and ACI	DIFF/WS		537					537
29	29	Hamot Medical Center		add packed-bed scrubber; increase activated carbon	DIFF/WS	287						287
36	36--1	Merck & Company, Inc.	Unit 2	add packed-bed scrubber and ACI	DIFF/WS	287						287
36	36--2	Merck & Company, Inc.	Unit 5	add packed-bed scrubber and ACI	DIFF/WS	287						287
40	40	Charleston Area Medical Center, General Hospital		increase natural gas; add packed-bed scrubber	DIFF/WS	287					3,790	4,077
42	42	Stericycle, Inc.		secondary chamber retrofit; replace DIFF; add packed-bed scrubber; increase activated carbon; only minor adjustment of system to obtain additional NO <sub>x</sub> control (marginal difference in NO <sub>x</sub> )	DIFF/WS	287	0		3,790			4,077
43	43	Boca Raton Community Hospital		secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS		537		3,790			4,327
44	44	Bethesda Memorial Hospital		add DIFF, caustic, and ACI	DIFF/WS		537					537
46	46	Holy Cross Hospital		increase natural gas; add DIFF and ACI	DIFF/WS		537				3,790	4,327
48	48	Memorial Regional Hospital		add DIFF, caustic, and ACI; only minor adjustment of system to obtain additional NO <sub>x</sub> control (marginal difference in NO <sub>x</sub> )	DIFF/WS		537					537
51	51	Lakeland Regional Medical Center		secondary chamber retrofit; replace DIFF; increase lime; add ACI	DIFF		0		3,790			3,790
54	54	Bayfront Medical Center		secondary chamber retrofit; add DIFF and ACI; only minor adjustment of system needed to obtain additional NO <sub>x</sub> control (marginal difference in NO <sub>x</sub> )	DIFF/WS		537		3,790			4,327
55	55	St. Joseph's Hospital		increase natural gas, replace DIFF; add packed-bed scrubber and ACI	DIFF/WS	287	0				3,790	4,077
59	59--1	Stericycle, Inc.	Unit 1	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS		537				3,790	4,327
59	59--2	Stericycle, Inc.	Unit 2	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS		537				3,790	4,327
60	60--1	BMWNC, Inc.	Unit 1	secondary chamber retrofit; add packed-bed scrubber; increase activated carbon	DIFF/WS	287			3,790			4,077

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Consolidated MACT floor controls	APCD code with MACT floor controls	MACT floor energy impacts, MMBtu/yr						
						Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor energy impacts
65	65-1	Stericycle, Inc.	Unit 1	secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS		537		3,790			4,327
65	65-2	Stericycle, Inc.	Unit 2	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS		537				3,790	4,327
71	71	Loyola University Medical Center		secondary chamber retrofit; add DIFF and ACI	DIFF/WS		537		3,790			4,327
77	77	Parkview Hospital		increase natural gas; add DIFF, caustic, and ACI	DIFF/WS		537				3,790	4,327
84	84	Mayo Clinic, Waste Management Facility		replace DIFF; add packed-bed scrubber; increase activated carbon; add SNCR	DIFF/WS	287	0			3.6		290
87	87	MedCentral Health System, Mansfield Hospital		increase natural gas; replace DIFF; add packed-bed scrubber; increase activated carbon	DIFF/WS	287	0				3,790	4,077
94	94	Stericycle, Inc.		increase natural gas; add DIFF, caustic, and ACI	DIFF/WS		537				3,790	4,327
98	98-1	University of Texas Medical Branch		add DIFF and ACI	DIFF/WS		537					537
106	106	Stericycle, Inc.		increase natural gas; add DIFF, caustic, and ACI	DIFF/WS		537				3,790	4,327
109	109	Healthcare Environmental Services Inc.		secondary chamber retrofit; replace DIFF; add packed-bed scrubber and SNCR; increase activated carbon	DIFF/WS	287	0		3,790	3.6		4,080
110	110	Stericycle, Inc.		secondary chamber retrofit; add FF; increase sodium bicarbonate and activated carbon; add SNCR	DIFF-ESP/WS			537	3,790	3.6		4,330
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	increase natural gas; replace DIFF; add packed-bed scrubber; increase activated carbon	DIFF/WS	287	0				3,790	4,077
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	replace DIFF; add packed-bed scrubber	DIFF/WS	287	0					287
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		secondary chamber retrofit	CA/WS				3,790			3,790
130	130	Department of Veterans Affairs Medical Center		add DIFF and caustic	DIFF/WS		537					537
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		add DIFF and ACI	DIFF/WS		90					90
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS		90		569			659
18	18	Franklin Square Hospital Center		secondary chamber retrofit; add DIFF, packed-bed scrubber, and ACI	DIFF/WS	43	90		569			702
21	21	Washington County Hospital		secondary chamber retrofit; add DIFF, packed-bed scrubber, and ACI	DIFF/WS	43	90		569			702
25	25	Holy Spirit Hospital		add DIFF, caustic, and ACI	DIFF/WS		90					90
30	30	Riddle Memorial Hospital		add DIFF and ACI	DIFF/WS		90					90
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		add FF	FF/WS			90				90
38	38	Wilkes-Barre General Hospital		add packed-bed scrubber; increase activated carbon	DIFF/WS	43						43
41	41	Thomas Memorial Hospital		add DIFF, caustic, and ACI	DIFF/WS		90					90
47	47	Malcolm Randall Veterans Affairs Medical Center		secondary chamber retrofit; add DIFF, packed-bed scrubber, and ACI	DIFF/WS	43	90		569			702

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Consolidated MACT floor controls	APCD code with MACT floor controls	MACT floor energy impacts, MMBtu/yr						
						Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor energy impacts
63	63	St. Jude Children's Research Hospital		add packed-bed scrubber; increase activated carbon	DIFF/WS	43						43
81	81	South Bend Medical Foundation		add DIFF, packed-bed scrubber, and ACI	DIFF/WS	43	90					133
82	82	Good Samaritan Hospital		add DIFF, caustic, and ACI	DIFF/WS		90					90
88	88	Medina General Hospital		secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS		90		569			659
95	95	St. Joseph's Hospital		add packed-bed scrubber; increase activated carbon	DIFF/WS	43						43
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	add FF	FF/WS			90				90
111	111	Wyoming Medical Center		increase natural gas; add DIFF and ACI	DIFF/WS		90				569	659
86	86	Fairfield Medical Center		add caustic and ACI	WS							0
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	secondary chamber retrofit, add caustic	WS				569			569
115	115	Kona Community Hospital		none	CC							0
116	116	Yukon-Kuskokwim Delta Regional Hospital		add DIFF and ACI	DIFF		32					32
<b>Total nationwide</b>						<b>4,601</b>	<b>10,237</b>	<b>717</b>	<b>41,312</b>	<b>18</b>	<b>42,260</b>	<b>99,146</b>

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor solid waste impacts, tpy							MACT floor wastewater impacts, gpy			
				DIFF	FF	ACI	Increase carbon	Increase lime	Increase NaHCO <sub>3</sub>	Total MACT floor solid waste impacts	Packed-bed scrubber	Increase caustic	Total MACT floor wastewater impacts	
1	1	Bristol-Myers Squibb Co.		183		15					199	6,533		6,533
5	5	Merck & Company, Inc.				15					15			0
15	15--1	Curtis Bay Energy	Unit 1			15					15	6,533		6,533
15	15--2	Curtis Bay Energy	Unit 2			15					15	6,533		6,533
20	20--1	Fort Detrick	Unit 5	194		15					209		6,533	6,533
20	20--2	Fort Detrick	Unit 6	194		15					209		6,533	6,533
29	29	Hamot Medical Center					15				15	6,533		6,533
36	36--1	Merck & Company, Inc.	Unit 2			15					15	6,533		6,533
36	36--2	Merck & Company, Inc.	Unit 5			15					15	6,533		6,533
40	40	Charleston Area Medical Center, General Hospital									0	6,533		6,533
42	42	Stericycle, Inc.		0			15				15	6,533		6,533
43	43	Boca Raton Community Hospital		194		15					209		6,533	6,533
44	44	Bethesda Memorial Hospital		194		15					209		6,533	6,533
46	46	Holy Cross Hospital		194		15					209			0
48	48	Memorial Regional Hospital		194		15					209		6,533	6,533
51	51	Lakeland Regional Medical Center		0		15		183			199			0
54	54	Bayfront Medical Center		194		15					209			0
55	55	St. Joseph's Hospital		0		15					15	6,533		6,533
59	59--1	Stericycle, Inc.	Unit 1	194		15					209		6,533	6,533
59	59--2	Stericycle, Inc.	Unit 2	194		15					209		6,533	6,533
60	60--1	BMWNC, Inc.	Unit 1				15				15	6,533		6,533

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor solid waste impacts, tpy							MACT floor wastewater impacts, gpy			
				DIFF	FF	ACI	Increase carbon	Increase lime	Increase NaHCO <sub>3</sub>	Total MACT floor solid waste impacts	Packed-bed scrubber	Increase caustic	Total MACT floor wastewater impacts	
65	65-1	Stericycle, Inc.	Unit 1	194		15					209		6,533	6,533
65	65-2	Stericycle, Inc.	Unit 2	194		15					209		6,533	6,533
71	71	Loyola University Medical Center		194		15					209			0
77	77	Parkview Hospital		194		15					209		6,533	6,533
84	84	Mayo Clinic, Waste Management Facility		0			15				15	6,533		6,533
87	87	MedCentral Health System, Mansfield Hospital		0			15				15	6,533		6,533
94	94	Stericycle, Inc.		194		15					209		6,533	6,533
98	98-1	University of Texas Medical Branch		194		15					209			0
106	106	Stericycle, Inc.		194		15					209		6,533	6,533
109	109	Healthcare Environmental Services Inc.		0			15				15	6,533		6,533
110	110	Stericycle, Inc.			10		15		135		160			0
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	0			15				15	6,533		6,533
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	0							0	6,533		6,533
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant									0			0
130	130	Department of Veterans Affairs Medical Center		194							194		6,533	6,533
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		7.3		2.3					9.5			0
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		7.3		2.3					9.5		353	353
18	18	Franklin Square Hospital Center		7.3		2.3					9.5	353		353
21	21	Washington County Hospital		7.3		2.3					9.5	353		353
25	25	Holy Spirit Hospital		7.3		2.3					9.5		353	353
30	30	Riddle Memorial Hospital		7.3		2.3					9.5			0
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator			2.3						2.3			0
38	38	Wilkes-Barre General Hospital					2.3				2.3	353		353
41	41	Thomas Memorial Hospital		7.3		2.3					9.5		353	353
47	47	Malcolm Randall Veterans Affairs Medical Center		7.3		2.3					9.5	353		353

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor solid waste impacts, tpy							MACT floor wastewater impacts, gpy			
				DIFF	FF	ACI	Increase carbon	Increase lime	Increase NaHCO <sub>3</sub>	Total MACT floor solid waste impacts	Packed-bed scrubber	Increase caustic	Total MACT floor wastewater impacts	
63	63	St. Jude Children's Research Hospital					2.3				2.3	353		353
81	81	South Bend Medical Foundation		7.3		2.3					9.5	353		353
82	82	Good Samaritan Hospital		7.3		2.3					9.5		353	353
88	88	Medina General Hospital		7.3		2.3					9.5		353	353
95	95	St. Joseph's Hospital					2.3				2.3	353		353
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1		2.3						2.3			0
111	111	Wyoming Medical Center		7.3		2.3					9.5			0
86	86	Fairfield Medical Center				2.3					2.3		47	47
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3								0		47	47
115	115	Kona Community Hospital									0			0
116	116	Yukon-Kuskokwim Delta Regional Hospital		1.8		0.6					2.3			0
<b>Total nationwide</b>				<b>3,563</b>	<b>15</b>	<b>396</b>	<b>129</b>			<b>135</b>	<b>4,420</b>	<b>100,466</b>	<b>86,788</b>	<b>187,255</b>

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor PM secondary emissions, lb/yr							MACT floor CO secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor PM secondary emissions	Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor CO secondary emissions
1	1	Bristol-Myers Squibb Co.		4.7	0					4.7	34	0				34	
5	5	Merck & Company, Inc.								0						0	
15	15--1	Curtis Bay Energy	Unit 1	4.7				0.06		4.7	34				0.4	34	
15	15--2	Curtis Bay Energy	Unit 2	4.7				0.06		4.7	34				0.4	34	
20	20--1	Fort Detrick	Unit 5		8.8					8.8		64				64	
20	20--2	Fort Detrick	Unit 6		8.8					8.8		64				64	
29	29	Hamot Medical Center		4.7						4.7	34					34	
36	36--1	Merck & Company, Inc.	Unit 2	4.7						4.7	34					34	
36	36--2	Merck & Company, Inc.	Unit 5	4.7						4.7	34					34	
40	40	Charleston Area Medical Center, General Hospital		4.7					7.2	12	34					318	
42	42	Stericycle, Inc.		4.7	0		7.2			12	34	0		318		352	
43	43	Boca Raton Community Hospital			8.8		7.2			16		64		318		382	
44	44	Bethesda Memorial Hospital			8.8					8.8		64				64	
46	46	Holy Cross Hospital			8.8				7.2	16		64				318	
48	48	Memorial Regional Hospital			8.8					8.8		64				64	
51	51	Lakeland Regional Medical Center			0		7.2			7.2		0		318		318	
54	54	Bayfront Medical Center			537		7.2			544		64		318		382	
55	55	St. Joseph's Hospital		4.7	0				7.2	11.9	34	0				318	
59	59--1	Stericycle, Inc.	Unit 1		8.8				7.2	16		64				318	
59	59--2	Stericycle, Inc.	Unit 2		8.8				7.2	16		64				318	
60	60--1	BMWNC, Inc.	Unit 1	4.7			7.2			12	34			318		352	

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor PM secondary emissions, lb/yr							MACT floor CO secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor PM secondary emissions	Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor CO secondary emissions
65	65-1	Stericycle, Inc.	Unit 1		8.8		7.2				16		64		318		382
65	65-2	Stericycle, Inc.	Unit 2		8.8				7.2		16		64			318	382
71	71	Loyola University Medical Center			8.8		7.2				16		64		318		382
77	77	Parkview Hospital			8.8				7.2		16		64			318	382
84	84	Mayo Clinic, Waste Management Facility		4.7	0			0.06			4.7	34	0		0.4		34
87	87	MedCentral Health System, Mansfield Hospital		4.7	0				7.2		12	34	0			318	352
94	94	Stericycle, Inc.			8.8				7.2		16		64			318	382
98	98-1	University of Texas Medical Branch			8.8						8.8		64				64
106	106	Stericycle, Inc.			8.8				7.2		16		64			318	382
109	109	Healthcare Environmental Services Inc.		4.7	0		7.2	0.06			12	34	0		318	0.4	353
110	110	Stericycle, Inc.				8.8	7.2	0.06			16			64	318	0.4	383
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	4.7	0				7.2		12	34	0			318	352
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	4.7	0						4.7	34	0				34
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant					7.2				7.2				318		318
130	130	Department of Veterans Affairs Medical Center			8.8						8.8		64				64
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility			1.5						1.5		11				11
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment			1.5		1.1				2.6		11		48		58
18	18	Franklin Square Hospital Center		0.7	1.5		1.1				3.3	5.1	11		48		64
21	21	Washington County Hospital		0.7	1.5		1.1				3.3	5.1	11		48		64
25	25	Holy Spirit Hospital			1.5						1.5		11				11
30	30	Riddle Memorial Hospital			1.5						1.5		11				11
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator				1.5					1.5			11			11
38	38	Wilkes-Barre General Hospital		0.7							0.7	5.1					5.1
41	41	Thomas Memorial Hospital			1.5						1.5		11				11
47	47	Malcolm Randall Veterans Affairs Medical Center		0.7	1.5		1.1				3.3	5.1	11		48		64

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor PM secondary emissions, lb/yr							MACT floor CO secondary emissions, lb/yr							
				Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor PM secondary emissions	Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor CO secondary emissions	
63	63	St. Jude Children's Research Hospital		0.7							0.7	5.1						5.1
81	81	South Bend Medical Foundation		0.7	1.5						2.2	5.1	11					16
82	82	Good Samaritan Hospital			1.5						1.5		11					11
88	88	Medina General Hospital			1.5		1.1				2.6		11		48			58
95	95	St. Joseph's Hospital		0.7							0.7	5.1						5.1
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1				1.5				1.5			11				11
111	111	Wyoming Medical Center			1.5					1.1	2.6		11				48	58
86	86	Fairfield Medical Center									0							0
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3					1.1			1.1				48			48
115	115	Kona Community Hospital									0							0
116	116	Yukon-Kuskokwim Delta Regional Hospital			0.5						0.5		3.7					3.7
<b>Total nationwide</b>				<b>75</b>	<b>695</b>	<b>12</b>	<b>78</b>	<b>0.3</b>	<b>80</b>	<b>941</b>	<b>547</b>	<b>1,216</b>	<b>85</b>	<b>3,470</b>	<b>2.1</b>	<b>3,550</b>	<b>8,871</b>	

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor NO <sub>x</sub> secondary emissions, lb/yr							MACT floor SO <sub>2</sub> secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor NO <sub>x</sub> secondary emissions	Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor SO <sub>2</sub> secondary emissions
1	1	Bristol-Myers Squibb Co.		17	0					17	34	0				34	
5	5	Merck & Company, Inc.								0						0	
15	15--1	Curtis Bay Energy	Unit 1	17				0.2		17	34				0.4	34	
15	15--2	Curtis Bay Energy	Unit 2	17				0.2		17	34				0.4	34	
20	20--1	Fort Detrick	Unit 5		32					32		63				63	
20	20--2	Fort Detrick	Unit 6		32					32		63				63	
29	29	Hamot Medical Center		17						17	34					34	
36	36--1	Merck & Company, Inc.	Unit 2	17						17	34					34	
36	36--2	Merck & Company, Inc.	Unit 5	17						17	34					34	
40	40	Charleston Area Medical Center, General Hospital		17					379	396	34				2.3	36	
42	42	Stericycle, Inc.		17	0		379			396	34	0		2.3		36	
43	43	Boca Raton Community Hospital			32		379			411		63		2.3		65	
44	44	Bethesda Memorial Hospital			32					32		63				63	
46	46	Holy Cross Hospital			32				379	411		63			2.3	65	
48	48	Memorial Regional Hospital			32					32		63				63	
51	51	Lakeland Regional Medical Center			0		379			379		0		2.3		2.3	
54	54	Bayfront Medical Center			32		379			411		63		2.3		65	
55	55	St. Joseph's Hospital		17	0				379	396	34	0			2.3	35.9	
59	59--1	Stericycle, Inc.	Unit 1		32				379	411		63			2.3	65	
59	59--2	Stericycle, Inc.	Unit 2		32				379	411		63			2.3	65	
60	60--1	BMWNC, Inc.	Unit 1	17			379			396	34			2.3		36	

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor NO <sub>x</sub> secondary emissions, lb/yr							MACT floor SO <sub>2</sub> secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor NO <sub>x</sub> secondary emissions	Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor SO <sub>2</sub> secondary emissions
65	65-1	Stericycle, Inc.	Unit 1		32		379			411		63		2.3		65	
65	65-2	Stericycle, Inc.	Unit 2		32				379	411		63			2.3	65	
71	71	Loyola University Medical Center			32		379			411		63		2.3		65	
77	77	Parkview Hospital			32				379	411		63			2.3	65	
84	84	Mayo Clinic, Waste Management Facility		17	0				0.2	17	34	0			0.4	34	
87	87	MedCentral Health System, Mansfield Hospital		17	0				379	396	34	0			2.3	36	
94	94	Stericycle, Inc.			32				379	411		63			2.3	65	
98	98-1	University of Texas Medical Branch			32					32		63				63	
106	106	Stericycle, Inc.			32				379	411		63			2.3	65	
109	109	Healthcare Environmental Services Inc.		17	0		379		0.2	396	34	0		2.3	0.4	36	
110	110	Stericycle, Inc.				32	379		0.2	411			63	2.3	0.4	66	
120	120-1	Municipality of Chambers County, Resource Recovery Center	Unit 1	17	0				379	396	34	0			2.3	36	
120	120-2	Municipality of Chambers County, Resource Recovery Center	Unit 2	17	0					17	34	0				34	
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant					379			379				2.3		2.3	
130	130	Department of Veterans Affairs Medical Center			32					32		63				63	
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility			5.4					5		11				11	
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment			5.4		57			62		11		0.3		11	
18	18	Franklin Square Hospital Center		2.6	5.4		57			65	5.0	11		0.3		16	
21	21	Washington County Hospital		2.6	5.4		57			65	5.0	11		0.3		16	
25	25	Holy Spirit Hospital			5.4					5.4		11				11	
30	30	Riddle Memorial Hospital			5.4					5.4		11				11	
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator				5.4				5.4			11			11	
38	38	Wilkes-Barre General Hospital		2.6						2.6	5.0					5.0	
41	41	Thomas Memorial Hospital			5.4					5.4		11				11	
47	47	Malcolm Randall Veterans Affairs Medical Center		2.6	5.4		57			65	5.0	11		0.3		16	

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	MACT floor NO <sub>x</sub> secondary emissions, lb/yr							MACT floor SO <sub>2</sub> secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor NO <sub>x</sub> secondary emissions	Packed-bed scrubber	DIFF	FF	Secondary chamber retrofit	SNCR	Increase natural gas	Total MACT floor SO <sub>2</sub> secondary emissions
63	63	St. Jude Children's Research Hospital		2.6						2.6	5.0					5.0	
81	81	South Bend Medical Foundation		2.6	5.4					8.0	5.0	11				16	
82	82	Good Samaritan Hospital			5.4					5.4		11				11	
88	88	Medina General Hospital			5.4		57			62		11		0.3		11	
95	95	St. Joseph's Hospital		2.6						2.6	5.0					5.0	
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1			5.4				5.4			11			11	
111	111	Wyoming Medical Center			5.4				57	62		11			0.3	11	
86	86	Fairfield Medical Center								0						0	
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3				57			57				0.3		0	
115	115	Kona Community Hospital								0						0	
116	116	Yukon-Kuskokwim Delta Regional Hospital			1.9					1.9		3.7				3.7	
<b>Total nationwide</b>				<b>276</b>	<b>615</b>	<b>43</b>	<b>4,131</b>	<b>1.1</b>	<b>4,226</b>	<b>9,293</b>	<b>540</b>	<b>1,201</b>	<b>84</b>	<b>25</b>	<b>2.1</b>	<b>25</b>	<b>1,877</b>

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Total MACT floor secondary emissions, lb/yr
1	1	Bristol-Myers Squibb Co.		90
5	5	Merck & Company, Inc.		0
15	15--1	Curtis Bay Energy	Unit 1	91
15	15--2	Curtis Bay Energy	Unit 2	91
20	20--1	Fort Detrick	Unit 5	168
20	20--2	Fort Detrick	Unit 6	168
29	29	Hamot Medical Center		90
36	36--1	Merck & Company, Inc.	Unit 2	90
36	36--2	Merck & Company, Inc.	Unit 5	90
40	40	Charleston Area Medical Center, General Hospital		796
42	42	Stericycle, Inc.		796
43	43	Boca Raton Community Hospital		875
44	44	Bethesda Memorial Hospital		168
46	46	Holy Cross Hospital		875
48	48	Memorial Regional Hospital		168
51	51	Lakeland Regional Medical Center		707
54	54	Bayfront Medical Center		1,402
55	55	St. Joseph's Hospital		796
59	59--1	Stericycle, Inc.	Unit 1	875
59	59--2	Stericycle, Inc.	Unit 2	875
60	60--1	BMWNC, Inc.	Unit 1	796

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Total MACT floor secondary emissions, lb/yr
65	65--1	Stericycle, Inc.	Unit 1	875
65	65--2	Stericycle, Inc.	Unit 2	875
71	71	Loyola University Medical Center		875
77	77	Parkview Hospital		875
84	84	Mayo Clinic, Waste Management Facility		91
87	87	MedCentral Health System, Mansfield Hospital		796
94	94	Stericycle, Inc.		875
98	98--1	University of Texas Medical Branch		168
106	106	Stericycle, Inc.		875
109	109	Healthcare Environmental Services Inc.		798
110	110	Stericycle, Inc.		876
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	796
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	90
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		707
130	130	Department of Veterans Affairs Medical Center		168
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		28
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		134
18	18	Franklin Square Hospital Center		148
21	21	Washington County Hospital		148
25	25	Holy Spirit Hospital		28
30	30	Riddle Memorial Hospital		28
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		28
38	38	Wilkes-Barre General Hospital		13
41	41	Thomas Memorial Hospital		28
47	47	Malcolm Randall Veterans Affairs Medical Center		148

**Table 12. Nationwide MACT Floor Secondary Im**

FACID	UNITID	Facility name	Unit number	Total MACT floor secondary emissions, lb/yr
63	63	St. Jude Children's Research Hospital		13
81	81	South Bend Medical Foundation		42
82	82	Good Samaritan Hospital		28
88	88	Medina General Hospital		134
95	95	St. Joseph's Hospital		13
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	28
111	111	Wyoming Medical Center		134
86	86	Fairfield Medical Center		0
129	129	Centers for Disease Control and Prevention-- Clifton, Building 18	Unit 3	106
115	115	Kona Community Hospital		0
116	116	Yukon-Kuskokwim Delta Regional Hospital		9.9
<b>Total nationwide</b>				<b>20,981</b>

**Table 13. Nationwide Beyond-the-Floor Secondary Impacts for Existing Sources**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/ existing	APCD code	APCD type	APCD description
1	1	Bristol-Myers Squibb Co.		Wallingford	CT	L	E	FF	Dry	Secondary chamber (1800F) and baghouse
5	5	Merck & Company, Inc.		Rahway	NJ	L	E	DIFF	Dry	Secondary chamber (1500F, 1 sec), partial quench, dry acid gas scrubber with dry lime injection, and baghouse
15	15--1	Curtis Bay Energy	Unit 1	Baltimore	MD	L	E	DIFF	Dry	Secondary chamber, dry scrubber, and baghouse
15	15--2	Curtis Bay Energy	Unit 2	Baltimore	MD	L	E	DIFF	Dry	Secondary chamber, dry scrubber, and baghouse
20	20--1	Fort Detrick	Unit 5	Fort Detrick	MD	L	E	WS	Wet	Secondary chamber and rotary atomizing wet scrubber
20	20--2	Fort Detrick	Unit 6	Fort Detrick	MD	L	E	WS	Wet	Secondary chamber and rotary atomizing wet scrubber
29	29	Hamot Medical Center		Erie	PA	L	E	DIFF/WS	Dry/wet	Secondary chamber (2000F, 2 sec), lime injection system, powdered activated carbon injection system, baghouse, and vertical upflow two-stage multi-microventuri scrubber system
36	36--1	Merck & Company, Inc.	Unit 2	West Point (Upper Gwynedd Township)	PA	L	E	DIFF	Dry	Secondary/tertiary chamber (2000F, 2 sec), water quench followed by sodium bicarbonate injection system with dry reaction chamber and pulse-jet baghouse
36	36--2	Merck & Company, Inc.	Unit 5	West Point (Upper Gwynedd Township)	PA	L	E	DIFF	Dry	Secondary chamber (1800F, 2.2 sec), water quench followed by sodium bicarbonate injection system and pulse-jet baghouse
40	40	Charleston Area Medical Center, General Hospital		Charleston	WV	L	E	DIFF	Dry	Secondary chamber (1800F, 2 sec), dry injection/baghouse scrubber system with activated carbon
42	42	Stericycle, Inc.		Apopka	FL	L	E	DIFF	Dry	Secondary chamber (1800, 1 sec), dry scrubbing system with quench chamber, passive absorber, lime and carbon injection, and baghouse.
43	43	Boca Raton Community Hospital		Boca Raton	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec) and rotary atomizing wet scrubber system with caustic soda injection
44	44	Bethesda Memorial Hospital		Boynton Beach	FL	L	E	WS	Wet	Secondary chamber (1800F, 2 sec) and rotary atomizing scrubber with mist eliminator
46	46	Holy Cross Hospital		Fort Lauderdale	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec) and venturi scrubber with packed bed absorption unit using dilute NaOH
48	48	Memorial Regional Hospital		Hollywood	FL	L	E	WS/WESP	Wet	Secondary chamber (1800F, 1 sec), packed column gas scrubber, and wet ESP
51	51	Lakeland Regional Medical Center		Lakeland	FL	L	E	DIFF	Dry	Secondary chamber (1800F, 1 sec), lime injection system, and baghouse
54	54	Bayfront Medical Center		St. Petersburg	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec) and flux force/condensation collision scrubber system using dilute NaOH

**Table 13. Nationwide Beyond-the-Floor Secondary Impacts for Existing Sources**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/existing	APCD code	APCD type	APCD description
55	55	St. Joseph's Hospital		Tampa	FL	L	E	DIFF/WS	Dry/wet	Secondary chamber (1800F, 1 sec), lime injection, baghouse, and venturi scrubber
59	59--1	Stericycle, Inc.	Unit 1	Haw River	NC	L	E	WS	Wet	Secondary chamber (1800F, 1 sec), rapid gas quench system, wet scrubber system consisting of a packed bed absorber and venturi scrubber, and demister.
59	59--2	Stericycle, Inc.	Unit 2	Haw River	NC	L	E	WS	Wet	Secondary chamber (1800F, 1 sec), rapid gas quench system, wet scrubber system consisting of a packed bed absorber and venturi scrubber, and demister.
60	60--1	BMWNC, Inc.	Unit 1	Matthews	NC	L	E	DIFF	Dry	Secondary chamber (1641F), dry scrubber with lime and activated carbon injection, and baghouse
65	65--1	Stericycle, Inc.	Unit 1	Clinton	IL	L	E	WS	Wet	Secondary chamber (1800F), venturi scrubber, and condensing absorber
65	65--2	Stericycle, Inc.	Unit 2	Clinton	IL	L	E	WS	Wet	Secondary chamber (1800F), venturi scrubber, and condensing absorber
71	71	Loyola University Medical Center		Maywood	IL	L	E	WS	Wet	Two secondary chambers (1600F), twin rotary atomizer scrubber using 50% caustic solution, and two demister pads
77	77	Parkview Hospital		Fort Wayne	IN	L	E	WS	Wet	Secondary chamber and wet scrubber
84	84	Mayo Clinic, Waste Management Facility		Rochester	MN	L	E	DIFF	Dry	Secondary chamber (1800F, 1 sec) and baghouse with lime and carbon injection
87	87	MedCentral Health System, Mansfield Hospital		Mansfield	OH	L	E	DIFF	Dry	Secondary chamber (1800F, 2 sec) and baghouse with lime and carbon injection system
94	94	Stericycle, Inc.		Warren	OH	L	E	WS	Wet	Secondary chamber (1800F, 2 sec), wet scrubber
98	98--1	University of Texas Medical Branch		Galveston	TX	L	E	WS	Wet	Secondary chamber, packed tower, and venturi scrubber with activated carbon injection
106	106	Stericycle, Inc.		Kansas City	KS	L	E	WS	Wet	Secondary chamber (1800F, 2 sec), wet scrubber
109	109	Healthcare Environmental Services Inc.		Fargo	ND	L	E	DIFF	Dry	Secondary chamber (1800F) and dry scrubber/baghouse system with lime and carbon injection
110	110	Stericycle, Inc.		North Salt Lake	UT	L	E	DI-ESP/WS	Dry/wet	Secondary chamber (1834F), carbon injection system, ESP, dry scrubber, and wet gas absorber
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	Anahuac	TX	L	N	DIFF	Dry	Secondary chamber, baghouse with virgin lime injection, urea injection, and activated carbon injection
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	Anahuac	TX	L	N	DIFF	Dry	Secondary chamber, baghouse with virgin lime injection, urea injection, and activated carbon injection
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		Greenville	NC	L	N	CA/WS	Dry/wet	Secondary chamber (1985F), rotary atomizing wet scrubber (with NaOH scrubbing medium), carbon bed adsorber, HEPA filtering system, and heat recovery system

**Table 13. Nationwide Beyond-the-Floor Secondary Impacts for Existing Sources**

FACID	UNITID	Facility name	Unit number	City	State	Category	New/ existing	APCD code	APCD type	APCD description
130	130	Department of Veterans Affairs Medical Center		Miami	FL	L	E	WS	Wet	Secondary chamber (1800F, 1 sec), venturi scrubber, and packed tower absorber
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		Baltimore	MD	M	E	WS	Wet	Secondary chamber (1832F) and venturi caustic scrubber with packed-bed scrubber
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		Baltimore	MD	M	E	WS	Wet	Secondary chamber (1800F) and venturi wet scrubber followed by saturation chamber and mist eliminator
18	18	Franklin Square Hospital Center		Baltimore	MD	M	E	WS	Wet	Secondary chamber (1800F) and venturi scrubber followed by quench chamber and mist eliminator
21	21	Washington County Hospital		Hagerstown	MD	M	E	WS	Wet	Secondary chamber and venturi caustic scrubber
25	25	Holy Spirit Hospital		Camp Hill	PA	M	E	WS	Wet	Secondary chamber (1800F) and venturi scrubber with prequench and NaOH injection
30	30	Riddle Memorial Hospital		Media	PA	M	E	WS	Wet	Secondary chamber (1800F, 2 sec), caustic packed tower scrubber, and high pressure venturi, with activated carbon injection
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		State College	PA	M	E	WS	Wet	Secondary chamber (1900F) and rotary atomizing wet scrubber with demister
38	38	Wilkes-Barre General Hospital		Wilkes-Barre	PA	M	N	DIFF	Dry	Secondary/tertiary chambers (1800F, 2.85 sec) and dry scrubber/baghouse with lime and activated carbon injection
41	41	Thomas Memorial Hospital		South Charleston	WV	M	E	WS	Wet	Secondary chamber (1800F) and venturi packed tower wet scrubber with caustic injection
47	47	Malcolm Randall Veterans Affairs Medical Center		Gainesville	FL	M	E	WS	Wet	Secondary chamber (1800F, 1 sec) and wet scrubber with caustic soda injection
63	63	St. Jude Children's Research Hospital		Memphis	TN	M	E	DIFF	Dry	Secondary chamber (1528F) and baghouse with sodium bicarbonate and carbon injection
81	81	South Bend Medical Foundation		South Bend	IN	M	E	WS	Wet	Secondary chamber and wet scrubber
82	82	Good Samaritan Hospital		Vincennes	IN	M	E	WS	Wet	Secondary chamber and multi-chamber spray scrubber
88	88	Medina General Hospital		Medina	OH	M	E	WS	Wet	Secondary chamber (1800F, 1 sec) and wet scrubber
95	95	St. Joseph's Hospital		Marshfield	WI	M	E	DIFF	Dry	Secondary chamber (1800F), quench tower, and baghouse with lime/carbon injection
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	Hamilton	MT	M	E	WS	Wet	Secondary chamber and wet scrubber
111	111	Wyoming Medical Center		Casper	WY	M	E	WS	Wet	Secondary chamber and wet scrubber
86	86	Fairfield Medical Center		Lancaster	OH	S	E	WS	Wet	Secondary chamber (1800F, 1 sec) and wet scrubber
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	Atlanta	GA	S	N	WS	Wet	Secondary chamber (1800F, 1.68 sec) and rotary atomizing wet scrubber
115	115	Kona Community Hospital		Kealahou	HI	SR	E	CC	Comb ctrl	Secondary chamber (1900F, 2 sec), no APCD



**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Maximum charge rate (lb/hr)	Stack gas flow rate (dscfm)	Stack gas temperature (°F)	Operating hours (hr/yr)	Autoclave secondary impacts					
								Energy impacts, MMBtu/yr	PM secondary emissions, lb/yr	CO secondary emissions, lb/yr	NO <sub>x</sub> secondary emissions, lb/yr	SO <sub>2</sub> secondary emissions, lb/yr	Total secondary emissions, lb/yr
1	1	Bristol-Myers Squibb Co.		1,000	1,648	217	2,072	1,107	18	132	67	130	346
5	5	Merck & Company, Inc.		799	7,346	246	4,321	1,107	18	132	67	130	346
15	15--1	Curtis Bay Energy	Unit 1	7,083	27,698	296	8,736	1,107	18	132	67	130	346
15	15--2	Curtis Bay Energy	Unit 2	7,083	30,578	303	8,736	1,107	18	132	67	130	346
20	20--1	Fort Detrick	Unit 5	1,000	2,424	87	1,300	1,107	18	132	67	130	346
20	20--2	Fort Detrick	Unit 6	1,000	2,308	92	1,300	1,107	18	132	67	130	346
29	29	Hamot Medical Center		1,060	3,701	122	2,080	1,107	18	132	67	130	346
36	36--1	Merck & Company, Inc.	Unit 2	2,000	5,235	358	865	1,107	18	132	67	130	346
36	36--2	Merck & Company, Inc.	Unit 5	3,045	8,119	304	5,753	1,107	18	132	67	130	346
40	40	Charleston Area Medical Center, General Hospital		1,000	4,323	312	1,248	1,107	18	132	67	130	346
42	42	Stericycle, Inc.		1,900	7,008	327	7,951	1,107	18	132	67	130	346
43	43	Boca Raton Community Hospital		730	2,078	91	8,736	1,107	18	132	67	130	346
44	44	Bethesda Memorial Hospital		1,000	4,537	106	3,024	1,107	18	132	67	130	346
46	46	Holy Cross Hospital		1,300	3,378	124	2,964	1,107	18	132	67	130	346
48	48	Memorial Regional Hospital		1,800	4,568	143	4,992	1,107	18	132	67	130	346
51	51	Lakeland Regional Medical Center		750	3,323	212	6,247	1,107	18	132	67	130	346
54	54	Bayfront Medical Center		1,500	2,898	133	3,352	1,107	18	132	67	130	346

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Maximum charge rate (lb/hr)	Stack gas flow rate (dscfm)	Stack gas temperature (°F)	Operating hours (hr/yr)	Autoclave secondary impacts					
								Energy impacts, MMBtu/yr	PM secondary emissions, lb/yr	CO secondary emissions, lb/yr	NO <sub>x</sub> secondary emissions, lb/yr	SO <sub>2</sub> secondary emissions, lb/yr	Total secondary emissions, lb/yr
55	55	St. Joseph's Hospital		1,500	3,347	400	8,008	1,107	18	132	67	130	346
59	59--1	Stericycle, Inc.	Unit 1	1,911	4,002	135	8,400	1,107	18	132	67	130	346
59	59--2	Stericycle, Inc.	Unit 2	1,911	3,917	138	8,400	1,107	18	132	67	130	346
60	60--1	BMWNC, Inc.	Unit 1	1,500	6,763	343	7,456	1,107	18	132	67	130	346
65	65--1	Stericycle, Inc.	Unit 1	1,500	3,304	143	7,665	1,107	18	132	67	130	346
65	65--2	Stericycle, Inc.	Unit 2	1,500	3,125	141	7,558	1,107	18	132	67	130	346
71	71	Loyola University Medical Center		1,650	3,526	156	4,800	1,107	18	132	67	130	346
77	77	Parkview Hospital		1,200	2,766	114	8,395	1,107	18	132	67	130	346
84	84	Mayo Clinic, Waste Management Facility		2,000	6,516	294	6,240	1,107	18	132	67	130	346
87	87	MedCentral Health System, Mansfield Hospital		600	2,351	260	3,120	1,107	18	132	67	130	346
94	94	Stericycle, Inc.		1,400	2,737	138	7,904	1,107	18	132	67	130	346
98	98--1	University of Texas Medical Branch		1,500	4,534	111	5,328	1,107	18	132	67	130	346
106	106	Stericycle, Inc.		1,500	3,590	152	8,760	1,107	18	132	67	130	346
109	109	Healthcare Environmental Services Inc.		1,686	4,478	302	1,872	1,107	18	132	67	130	346
110	110	Stericycle, Inc.		1,935	6,291	126	7,309	1,107	18	132	67	130	346
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	4,167	10,031	296	7,896	1,107	18	132	67	130	346
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	4,167	9,028	291	7,896	1,107	18	132	67	130	346
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		1,000	3,124	125	625	1,107	18	132	67	130	346

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Maximum charge rate (lb/hr)	Stack gas flow rate (dscfm)	Stack gas temperature (°F)	Operating hours (hr/yr)	Autoclave secondary impacts					
								Energy impacts, MMBtu/yr	PM secondary emissions, lb/yr	CO secondary emissions, lb/yr	NO <sub>x</sub> secondary emissions, lb/yr	SO <sub>2</sub> secondary emissions, lb/yr	Total secondary emissions, lb/yr
130	130	Department of Veterans Affairs Medical Center		1,000	6,422	155	4,160	1,107	18	132	67	130	346
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		500	1,972	189	1,440	136	2.2	16	8.2	16	42
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		320	1,890	179	1,350	136	2.2	16	8.2	16	42
18	18	Franklin Square Hospital Center		500	2,999	54	5,408	136	2.2	16	8.2	16	42
21	21	Washington County Hospital		500	1,834	112	2,496	136	2.2	16	8.2	16	42
25	25	Holy Spirit Hospital		500	1,702	99	3,944	136	2.2	16	8.2	16	42
30	30	Riddle Memorial Hospital		500	1,730	239	2,920	136	2.2	16	8.2	16	42
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		500	2,117	175	1,022	136	2.2	16	8.2	16	42
38	38	Wilkes-Barre General Hospital		400	2,063	274	4,472	136	2.2	16	8.2	16	42
41	41	Thomas Memorial Hospital		470	1,526	146	2,080	136	2.2	16	8.2	16	42
47	47	Malcolm Randall Veterans Affairs Medical Center		495	1,645	115	1,664	136	2.2	16	8.2	16	42
63	63	St. Jude Children's Research Hospital		500	2,333	276	1,050	136	2.2	16	8.2	16	42
81	81	South Bend Medical Foundation		470	2,325	121	2,028	136	2.2	16	8.2	16	42
82	82	Good Samaritan Hospital		500	1,352	128	2,574	136	2.2	16	8.2	16	42
88	88	Medina General Hospital		300	1,153	100	3,016	136	2.2	16	8.2	16	42
95	95	St. Joseph's Hospital		500	1,634	223	1,404	136	2.2	16	8.2	16	42
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	500	1,790	112	1,248	136	2.2	16	8.2	16	42
111	111	Wyoming Medical Center		400	1,505	130	989	136	2.2	16	8.2	16	42
86	86	Fairfield Medical Center		95	1,095	97	5,018	102	1.7	12	6.1	12	32
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	120	715	163	2,920	102	1.7	12	6.1	12	32
115	115	Kona Community Hospital		200	684	1,787	1,430	38	0.6	4.5	2.3	4.5	12

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Maximum charge rate (lb/hr)	Stack gas flow rate (dscfm)	Stack gas temperature (°F)	Operating hours (hr/yr)	Autoclave secondary impacts					
								Energy impacts, MMBtu/yr	PM secondary emissions, lb/yr	CO secondary emissions, lb/yr	NO <sub>x</sub> secondary emissions, lb/yr	SO <sub>2</sub> secondary emissions, lb/yr	Total secondary emissions, lb/yr
116	116	Yukon-Kuskokwim Delta Regional Hospital		50	559	1,457	1,560	38	0.6	4.5	2.3	4.5	12
<b>Total nationwide</b>								42,433	692	5,042	2,550	4,978	13,261

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Landfill secondary impacts				HCl unit average (ppmvd)	CO unit average (ppmvd)	Pb unit average (mg/dscm)	Cd unit average (mg/dscm)	Hg unit average (mg/dscm)	PM unit average (gr/dscf)	CDD/CDF unit average (ng/dscm)	TEQ unit average (ng/dscm)
				Solid waste impacts, tpy	CH <sub>4</sub> secondary emissions, tpy	Hg secondary emissions, lb/yr	Total secondary emissions, tpy								
1	1	Bristol-Myers Squibb Co.		69	65	0.0009	65	65.7	0.983	0.319	0.00364	0.000695	0.00180	36.9	0.659
5	5	Merck & Company, Inc.		116	65	0.0009	65	0.780	1.41	0.0155	0.00265	0.00353	0.00330	12.8	0.110
15	15--1	Curtis Bay Energy	Unit 1	2,073	65	0.0009	65	85.2	1.26	0.00504	0.000887	0.174	0.00823	27.7	0.451
15	15--2	Curtis Bay Energy	Unit 2	2,073	65	0.0009	65	76.9	2.91	0.00769	0.00130	0.300	0.00407	5.47	0.115
20	20--1	Fort Detrick	Unit 5	44	65	0.0009	65	0.190	0.871	0.126	0.00992	0.00324	0.00721	85.2	0.762
20	20--2	Fort Detrick	Unit 6	44	65	0.0009	65	0.353	1.17	0.182	0.00867	0.00771	0.00775	97.3	1.26
29	29	Hamot Medical Center		74	65	0.0009	65	16.6	2.60	0.00675	0.00119	0.00400	0.00174	7.72	0.0879
36	36--1	Merck & Company, Inc.	Unit 2	58	65	0.0009	65	4.22	2.46	0.00115	0.000853	0.00305	0.00156	3.71	0.0442
36	36--2	Merck & Company, Inc.	Unit 5	587	65	0.0009	65	3.75	1.07	0.0109	0.00242	0.0141	0.00255	6.78	0.308
40	40	Charleston Area Medical Center, General Hospital		42	65	0.0009	65	26.6	11.3	0.00468	0.00186	0.00418	0.00106	1.31	0.0153
42	42	Stericycle, Inc.		506	65	0.0009	65	27.1	10.7	0.0434	0.00886	0.0132	0.00203	24.3	0.748
43	43	Boca Raton Community Hospital		214	65	0.0009	65	0.986	6.46	0.0883	0.00537	0.0119	0.0104	67.7	0.852
44	44	Bethesda Memorial Hospital		101	65	0.0009	65	0.608	2.74	0.0774	0.00929	0.0739	0.00960	54.3	1.21
46	46	Holy Cross Hospital		129	65	0.0009	65	1.18	4.91	0.0618	0.0168	0.0504	0.0103	37.5	2.23
48	48	Memorial Regional Hospital		301	65	0.0009	65	1.02	1.17	0.0928	0.00560	0.00374	0.00973	48.3	1.29
51	51	Lakeland Regional Medical Center		157	65	0.0009	65	2.68	6.35	0.0348	0.00365	0.00244	0.00254	68.2	1.29
54	54	Bayfront Medical Center		168	65	0.0009	65	0.947	9.36	0.0976	0.00379	0.00128	0.00543	46.6	0.819

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Landfill secondary impacts				HCl unit average (ppmvd)	CO unit average (ppmvd)	Pb unit average (mg/dscm)	Cd unit average (mg/dscm)	Hg unit average (mg/dscm)	PM unit average (gr/dscf)	CDD/CDF unit average (ng/dscm)	TEQ unit average (ng/dscm)
				Solid waste impacts, tpy	CH <sub>4</sub> secondary emissions, tpy	Hg secondary emissions, lb/yr	Total secondary emissions, tpy								
55	55	St. Joseph's Hospital		402	65	0.0009	65	12.5	5.85	0.0740	0.00205	0.00730	0.00111	66.2	1.35
59	59--1	Stericycle, Inc.	Unit 1	538	65	0.0009	65	4.24	3.95	0.206	0.0233	0.0389	0.00714	2.82	0.0664
59	59--2	Stericycle, Inc.	Unit 2	538	65	0.0009	65	3.88	4.61	0.206	0.0188	0.118	0.0102	5.48	0.0845
60	60--1	BMWNC, Inc.	Unit 1	375	65	0.0009	65	38.8	15.1	0.00335	0.000532	0.0598	0.00504	6.10	0.149
65	65--1	Stericycle, Inc.	Unit 1	385	65	0.0009	65	1.12	12.9	0.200	0.00572	0.415	0.00921	1.24	0.0105
65	65--2	Stericycle, Inc.	Unit 2	380	65	0.0009	65	1.43	5.77	0.134	0.0123	0.377	0.00878	0.837	0.0126
71	71	Loyola University Medical Center		265	65	0.0009	65	2.22	7.07	0.178	0.0152	0.0183	0.0105	67.9	0.630
77	77	Parkview Hospital		337	65	0.0009	65	2.68	5.90	0.177	0.0802	0.00623	0.0109	7.10	0.0898
84	84	Mayo Clinic, Waste Management Facility		418	65	0.0009	65	15.2	2.24	0.291	0.0101	0.0445	0.0137	0.357	0.0117
87	87	MedCentral Health System, Mansfield Hospital		63	65	0.0009	65	24.8	4.81	0.0415	0.00113	0.00898	0.00357	29.8	0.560
94	94	Stericycle, Inc.		371	65	0.0009	65	0.661	4.45	0.244	0.00524	0.239	0.00617	14.7	0.341
98	98--1	University of Texas Medical Branch		268	65	0.0009	65	2.12	1.73	0.756	0.00298	0.0482	0.0147	98.1	1.06
106	106	Stericycle, Inc.		440	65	0.0009	65	0.567	4.62	0.127	0.00396	0.375	0.00828	2.40	0.0176
109	109	Healthcare Environmental Services Inc.		106	65	0.0009	65	72.5	14.7	0.0171	0.00296	0.129	0.00611	16.0	1.95
110	110	Stericycle, Inc.		474	65	0.0009	65	3.93	7.39	0.0309	0.00214	0.0746	0.00449	3.37	0.0824
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1,102	65	0.0009	65	11.0	3.96	0.0187	0.00132	0.0130	0.00702	0.498	0.00807
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	1,102	65	0.0009	65	5.30	2.86	0.00778	0.000889	0.00559	0.00947	0.152	0.00378
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		21	65	0.0009	65	1.58	10.7	0.000296	0.000106	0.00164	0.00323	0.380	0.00532

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Landfill secondary impacts				HCl unit average (ppmvd)	CO unit average (ppmvd)	Pb unit average (mg/dscm)	Cd unit average (mg/dscm)	Hg unit average (mg/dscm)	PM unit average (gr/dscf)	CDD/CDF unit average (ng/dscm)	TEQ unit average (ng/dscm)
				Solid waste impacts, tpy	CH <sub>4</sub> secondary emissions, tpy	Hg secondary emissions, lb/yr	Total secondary emissions, tpy								
130	130	Department of Veterans Affairs Medical Center		139	65	0.0009	65	8.32	1.00	0.0435	0.00564	0.00542	0.0111	0.665	0.0160
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		24	7.2	0.0001	7.2	0.708	1.50	0.973	0.122	0.0405	0.0126	1.06	0.0509
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		14	7.2	0.0001	7.2	1.39	11.8	0.331	0.0472	0.00395	0.0294	6.98	0.151
18	18	Franklin Square Hospital Center		91	7.2	0.0001	7.2	1.48	5.363	0.262	0.0474	0.00270	0.0256	91.4	0.996
21	21	Washington County Hospital		42	7.2	0.0001	7.2	6.26	6.62	0.164	0.0139	0.000836	0.0197	76.2	1.32
25	25	Holy Spirit Hospital		66	7.2	0.0001	7.2	0.736	1.88	0.155	0.0439	0.00346	0.0164	3.47	0.0299
30	30	Riddle Memorial Hospital		49	7.2	0.0001	7.2	2.10	1.41	0.178	0.00366	0.0108	0.0124	78.2	1.42
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		17	7.2	0.0001	7.2	1.27	2.11	0.151	0.00408	0.00124	0.0239	0.0973	0.00291
38	38	Wilkes-Barre General Hospital		60	7.2	0.0001	7.2	8.95	2.08	0.00406	0.00106	0.00927	0.00399	16.3	0.193
41	41	Thomas Memorial Hospital		33	7.2	0.0001	7.2	2.62	0.946	0.723	0.0297	0.109	0.0261	0.175	0.00424
47	47	Malcolm Randall Veterans Affairs Medical Center		28	7.2	0.0001	7.2	4.69	11.6	0.227	0.0877	0.0195	0.0173	4.48	0.111
63	63	St. Jude Children's Research Hospital		18	7.2	0.0001	7.2	27.5	0.679	0.00485	0.00152	0.00361	0.00505	9.11	0.160
81	81	South Bend Medical Foundation		32	7.2	0.0001	7.2	12.3	2.06	0.539	0.00176	0.206	0.01159	4.10	0.0409
82	82	Good Samaritan Hospital		43	7.2	0.0001	7.2	1.58	1.91	0.0261	0.00336	0.00251	0.0137	27.9	0.0967
88	88	Medina General Hospital		30	7.2	0.0001	7.2	3.29	14.1	0.669	0.0109	0.00716	0.0267	17.2	0.458
95	95	St. Joseph's Hospital		24	7.2	0.0001	7.2	5.27	2.15	0.00397	0.00128	0.00254	0.00294	1.28	0.0457
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	21	7.2	0.0001	7.2	0.455	1.97	0.0996	0.00773	0.00312	0.0216	0.206	0.00300
111	111	Wyoming Medical Center		13	7.2	0.0001	7.2	1.17	3.28	0.0496	0.0182	0.0237	0.00336	74.0	1.12
86	86	Fairfield Medical Center		16	2.9	0.00004	2.9	1.03	2.27	0.161	0.00256	0.0114	0.0137	2.89	0.0624
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	12	2.9	0.00004	2.9	1.30	12.11	0.0727	0.00545	0.00292	0.00760	2.89	0.00453
115	115	Kona Community Hospital		10	1.4	0.00002	1.4	135	7.00	0.226	0.0380	0.00158	0.0128	29.6	0.618



**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	NO <sub>x</sub> unit average (ppmvd)	SO <sub>2</sub> unit average (ppmvd)	Beyond-the-floor HCl limit (ppmvd)	Beyond-the-floor CO limit (ppmvd)	Beyond-the-floor Pb limit (mg/dscm)	Beyond-the-floor Cd limit (mg/dscm)	Beyond-the-floor Hg limit (mg/dscm)	Beyond-the-floor PM limit (gr/dscf)	Beyond-the-floor CDD/CDF limit (ng/dscm)	Beyond-the-floor TEQ limit (ng/dscm)	Beyond-the-floor NO <sub>x</sub> limit (ppmvd)
1	1	Bristol-Myers Squibb Co.		119	29.9	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
5	5	Merck & Company, Inc.		112	2.72	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
15	15-1	Curtis Bay Energy	Unit 1	187	23.0	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
15	15-2	Curtis Bay Energy	Unit 2	180	34.7	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
20	20-1	Fort Detrick	Unit 5	121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
20	20-2	Fort Detrick	Unit 6	121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
29	29	Hamot Medical Center		131	2.78	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
36	36-1	Merck & Company, Inc.	Unit 2	99.8	1.13	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
36	36-2	Merck & Company, Inc.	Unit 5	94.4	2.35	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
40	40	Charleston Area Medical Center, General Hospital		92.7	2.07	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
42	42	Stericycle, Inc.		149	1.50	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
43	43	Boca Raton Community Hospital		121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
44	44	Bethesda Memorial Hospital		88.3	4.62	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
46	46	Holy Cross Hospital		67.9	1.16	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
48	48	Memorial Regional Hospital		142	3.41	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
51	51	Lakeland Regional Medical Center		77.1	2.13	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
54	54	Bayfront Medical Center		140	1.25	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	NO <sub>x</sub> unit average (ppmvd)	SO <sub>2</sub> unit average (ppmvd)	Beyond-the-floor HCl limit (ppmvd)	Beyond-the-floor CO limit (ppmvd)	Beyond-the-floor Pb limit (mg/dscm)	Beyond-the-floor Cd limit (mg/dscm)	Beyond-the-floor Hg limit (mg/dscm)	Beyond-the-floor PM limit (gr/dscf)	Beyond-the-floor CDD/CDF limit (ng/dscm)	Beyond-the-floor TEQ limit (ng/dscm)	Beyond-the-floor NO <sub>x</sub> limit (ppmvd)
55	55	St. Joseph's Hospital		123	2.52	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
59	59--1	Stericycle, Inc.	Unit 1	121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
59	59--2	Stericycle, Inc.	Unit 2	121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
60	60--1	BMWNC, Inc.	Unit 1	104	7.03	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
65	65--1	Stericycle, Inc.	Unit 1	121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
65	65--2	Stericycle, Inc.	Unit 2	121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
71	71	Loyola University Medical Center		107	0.819	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
77	77	Parkview Hospital		121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
84	84	Mayo Clinic, Waste Management Facility		176	1.45	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
87	87	MedCentral Health System, Mansfield Hospital		121	9.27	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
94	94	Stericycle, Inc.		121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
98	98--1	University of Texas Medical Branch		78.9	1.12	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
106	106	Stericycle, Inc.		121	2.85	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
109	109	Healthcare Environmental Services Inc.		207	20.2	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
110	110	Stericycle, Inc.		228	3.35	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	72.4	1.21	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	88.4	0.462	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		66.9	1.45	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	NO <sub>x</sub> unit average (ppmvd)	SO <sub>2</sub> unit average (ppmvd)	Beyond-the-floor HCl limit (ppmvd)	Beyond-the-floor CO limit (ppmvd)	Beyond-the-floor Pb limit (mg/dscm)	Beyond-the-floor Cd limit (mg/dscm)	Beyond-the-floor Hg limit (mg/dscm)	Beyond-the-floor PM limit (gr/dscf)	Beyond-the-floor CDD/CDF limit (ng/dscm)	Beyond-the-floor TEQ limit (ng/dscm)	Beyond-the-floor NO <sub>x</sub> limit (ppmvd)
130	130	Department of Veterans Affairs Medical Center		81.5	7.58	0.75	2.9	0.00047	0.00012	0.00093	0.0048	0.6	0.014	110
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		99.8	0.469	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		87.9	2.88	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
18	18	Franklin Square Hospital Center		84.7	10.9	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
21	21	Washington County Hospital		105	3.52	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
25	25	Holy Spirit Hospital		105	3.52	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
30	30	Riddle Memorial Hospital		124	0.336	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		105	1.22	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
38	38	Wilkes-Barre General Hospital		105	1.90	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
41	41	Thomas Memorial Hospital		94.4	2.46	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
47	47	Malcolm Randall Veterans Affairs Medical Center		148	2.54	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
63	63	St. Jude Children's Research Hospital		131	2.02	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
81	81	South Bend Medical Foundation		15.0	11.7	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
82	82	Good Samaritan Hospital		105	3.52	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
88	88	Medina General Hospital		105	3.52	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
95	95	St. Joseph's Hospital		105	1.96	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	128	0.932	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
111	111	Wyoming Medical Center		141	1.80	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.0097	38
86	86	Fairfield Medical Center		105	3.52	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.008	38
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	105	3.52	1.8	1.9	0.016	0.0071	0.002	0.0099	0.35	0.008	38
115	115	Kona Community Hospital		95	3.52	4.5	8.2	0.18	0.012	0.0040	0.017	8.3	0.008	38





**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor SO <sub>2</sub> limit (ppmvd)	Meets HCl Limit	Meets CO Limit	Meets Pb Limit	Meets Cd Limit	Meets Hg Limit	Meets PM Limit	Meets Total CDD/CDF Limit	Meets CDD/CDF TEQ Limit	Meets CDD/CDF Limit (Total or TEQ)	Meets NO <sub>x</sub> Limit	Meets SO <sub>2</sub> Limit
55	55	St. Joseph's Hospital		1.9	1	1	1	1	1	0	1	1	1	1	1
59	59--1	Stericycle, Inc.	Unit 1	1.9	1	1	1	1	1	1	1	1	1	1	1
59	59--2	Stericycle, Inc.	Unit 2	1.9	1	1	1	1	1	1	1	1	1	1	1
60	60--1	BMWNC, Inc.	Unit 1	1.9	1	1	1	1	1	1	1	1	1	0	1
65	65--1	Stericycle, Inc.	Unit 1	1.9	1	1	1	1	1	1	1	0	0	1	1
65	65--2	Stericycle, Inc.	Unit 2	1.9	1	1	1	1	1	1	1	0	0	1	1
71	71	Loyola University Medical Center		1.9	1	1	1	1	1	1	1	1	1	0	0
77	77	Parkview Hospital		1.9	1	1	1	1	1	1	1	1	1	1	1
84	84	Mayo Clinic, Waste Management Facility		1.9	1	0	1	1	1	1	0	0	0	1	0
87	87	MedCentral Health System, Mansfield Hospital		1.9	1	1	1	1	1	0	1	1	1	1	1
94	94	Stericycle, Inc.		1.9	0	1	1	1	1	1	1	1	1	1	1
98	98--1	University of Texas Medical Branch		1.9	1	0	1	1	1	1	1	1	1	0	0
106	106	Stericycle, Inc.		1.9	0	1	1	1	1	1	1	1	1	1	1
109	109	Healthcare Environmental Services Inc.		1.9	1	1	1	1	1	1	1	1	1	1	1
110	110	Stericycle, Inc.		1.9	1	1	1	1	1	0	1	1	1	1	1
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1.9	1	1	1	1	1	1	0	0	0	0	0
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	1.9	1	0	1	1	1	1	0	0	0	0	0
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		1.9	1	1	0	0	1	0	0	0	0	0	0

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor SO <sub>2</sub> limit (ppmvd)	Meets HCl Limit	Meets CO Limit	Meets Pb Limit	Meets Cd Limit	Meets Hg Limit	Meets PM Limit	Meets Total CDD/CDF Limit	Meets CDD/CDF TEQ Limit	Meets CDD/CDF Limit (Total or TEQ)	Meets NO <sub>x</sub> Limit	Meets SO <sub>2</sub> Limit
130	130	Department of Veterans Affairs Medical Center		1.9	1	0	1	1	1	1	1	1	1	0	1
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		0.78	0	0	1	1	1	1	1	1	1	1	0
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		0.78	0	1	1	1	1	1	1	1	1	1	1
18	18	Franklin Square Hospital Center		0.78	0	1	1	1	1	1	1	1	1	1	1
21	21	Washington County Hospital		0.78	1	1	1	1	0	1	1	1	1	1	1
25	25	Holy Spirit Hospital		0.78	0	0	1	1	1	1	1	1	1	1	1
30	30	Riddle Memorial Hospital		0.78	1	0	1	0	1	1	1	1	1	1	0
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		0.78	0	1	1	0	0	1	0	0	0	1	1
38	38	Wilkes-Barre General Hospital		0.78	1	1	0	0	1	0	1	1	1	1	1
41	41	Thomas Memorial Hospital		0.78	1	0	1	1	1	1	0	0	0	1	1
47	47	Malcolm Randall Veterans Affairs Medical Center		0.78	1	1	1	1	1	1	1	1	1	1	1
63	63	St. Jude Children's Research Hospital		0.78	1	0	0	0	1	0	1	1	1	1	1
81	81	South Bend Medical Foundation		0.78	1	1	1	0	1	1	1	1	1	0	1
82	82	Good Samaritan Hospital		0.78	0	1	1	0	1	1	1	1	1	1	1
88	88	Medina General Hospital		0.78	1	1	1	1	1	1	1	1	1	1	1
95	95	St. Joseph's Hospital		0.78	1	1	0	0	1	0	1	1	1	1	1
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	0.78	0	1	1	1	1	1	0	0	0	1	1
111	111	Wyoming Medical Center		0.78	0	1	1	1	1	0	1	1	1	1	1
86	86	Fairfield Medical Center		0.78	0	1	1	0	1	1	1	1	1	1	1
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	0.78	0	1	1	0	1	0	1	0	0	1	1
115	115	Kona Community Hospital		0.78	1	0	1	1	0	0	1	1	1	1	1



**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	HCl % Improvement Needed	MACT floor HCl control	Beyond-the-floor HCl control	CO % Improvement Needed	MACT floor CO control	Beyond-the-floor CO control	Pb % Improvement Needed	MACT floor Pb control	Beyond-the-floor Pb control
1	1	Bristol-Myers Squibb Co.		8654%	add packed-bed scrubber	add caustic	-66%	none	no additional control	67719%	replace FF	improve FF performance
5	5	Merck & Company, Inc.		4.1%	none	increase lime	-51%	none	no additional control	3195%	improve FF performance	replace FF
15	15--1	Curtis Bay Energy	Unit 1	11260%	add packed-bed scrubber	add caustic	-57%	none	no additional control	971%	none	replace FF
15	15--2	Curtis Bay Energy	Unit 2	10152%	add packed-bed scrubber	add caustic	0.5%	none	minor adjustment (marginal difference in CO)	1536%	none	replace FF
20	20--1	Fort Detrick	Unit 5	-75%	none	no additional control	-70%	none	no additional control	26778%	add FF	improve FF performance
20	20--2	Fort Detrick	Unit 6	-53%	none	no additional control	-60%	none	no additional control	38658%	add FF	improve FF performance
29	29	Hamot Medical Center		2114%	add packed-bed scrubber	add caustic	-10%	none	no additional control	1337%	none	replace FF
36	36--1	Merck & Company, Inc.	Unit 2	463%	add packed-bed scrubber	add caustic	-15%	none	no additional control	144%	none	replace FF
36	36--2	Merck & Company, Inc.	Unit 5	400%	add packed-bed scrubber	add caustic	-63%	none	no additional control	2221%	none	replace FF
40	40	Charleston Area Medical Center, General Hospital		3452%	add packed-bed scrubber	add caustic	290%	increase natural gas	add more natural gas	896%	none	replace FF
42	42	Stericycle, Inc.		3520%	add packed-bed scrubber	add caustic	270%	secondary chamber retrofit	add natural gas	9130%	replace FF	improve FF performance
43	43	Boca Raton Community Hospital		31%	none	add caustic	123%	secondary chamber retrofit	add natural gas	18691%	add FF	improve FF performance
44	44	Bethesda Memorial Hospital		-19%	none	no additional control	-5.4%	none	no additional control	16370%	add FF	improve FF performance
46	46	Holy Cross Hospital		57%	none	add caustic	69%	increase natural gas	secondary chamber retrofit	13050%	add FF	improve FF performance
48	48	Memorial Regional Hospital		36%	none	add caustic	-60%	none	no additional control	19643%	add FF	improve FF performance
51	51	Lakeland Regional Medical Center		258%	increase lime	add packed-bed scrubber	119%	secondary chamber retrofit	add natural gas	7306%	replace FF	improve FF performance
54	54	Bayfront Medical Center		26%	none	add caustic	223%	secondary chamber retrofit	add natural gas	20674%	add FF	improve FF performance

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	HCl % Improvement Needed	MACT floor HCl control	Beyond-the-floor HCl control	CO % Improvement Needed	MACT floor CO control	Beyond-the-floor CO control	Pb % Improvement Needed	MACT floor Pb control	Beyond-the-floor Pb control
55	55	St. Joseph's Hospital		1571%	add packed-bed scrubber	add caustic	102%	increase natural gas	secondary chamber retrofit	15646%	replace FF	improve FF performance
59	59--1	Stericycle, Inc.	Unit 1	465%	add caustic	add caustic	36%	increase natural gas	add more natural gas	43645%	add FF	improve FF performance
59	59--2	Stericycle, Inc.	Unit 2	417%	add caustic	add caustic	59%	increase natural gas	add more natural gas	43681%	add FF	improve FF performance
60	60--1	BMWNC, Inc.	Unit 1	5072%	add packed-bed scrubber	add caustic	420%	secondary chamber retrofit	add natural gas	612%	none	replace FF
65	65--1	Stericycle, Inc.	Unit 1	50%	none	add caustic	345%	secondary chamber retrofit	add natural gas	42549%	add FF	improve FF performance
65	65--2	Stericycle, Inc.	Unit 2	91%	none	add caustic	99%	increase natural gas	secondary chamber retrofit	28512%	add FF	improve FF performance
71	71	Loyola University Medical Center		196%	none	add packed-bed scrubber	144%	secondary chamber retrofit	add natural gas	37690%	add FF	improve FF performance
77	77	Parkview Hospital		258%	increase caustic	add packed-bed scrubber	103%	increase natural gas	secondary chamber retrofit	37633%	add FF	improve FF performance
84	84	Mayo Clinic, Waste Management Facility		1933%	add packed-bed scrubber	add caustic	-23%	none	no additional control	61780%	replace FF	improve FF performance
87	87	MedCentral Health System, Mansfield Hospital		3210%	add packed-bed scrubber	add caustic	66%	increase natural gas	add more natural gas	8729%	replace FF	improve FF performance
94	94	Stericycle, Inc.		-12%	none	no additional control	53%	increase natural gas	add more natural gas	51799%	add FF	improve FF performance
98	98--1	University of Texas Medical Branch		183%	none	add caustic	-40%	none	no additional control	160721%	add FF	improve FF performance
106	106	Stericycle, Inc.		-24%	none	no additional control	59%	increase natural gas	add more natural gas	26884%	add FF	improve FF performance
109	109	Healthcare Environmental Services Inc.		9560%	add packed-bed scrubber	add caustic	408%	secondary chamber retrofit	add natural gas	3530%	replace FF	improve FF performance
110	110	Stericycle, Inc.		423%	increase sodium bicarbonate	add more sodium bicarbonate	155%	secondary chamber retrofit	add natural gas	6468%	add FF	improve FF performance
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1371%	add packed-bed scrubber	add caustic	37%	increase natural gas	add more natural gas	3873%	replace FF	improve FF performance
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	607%	add packed-bed scrubber	add caustic	-1.4%	none	no additional control	1555%	none	improve FF performance
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		110%	none	add caustic	267%	secondary chamber retrofit	add natural gas	-37%	none	no additional control

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	HCl % Improvement Needed	MACT floor HCl control	Beyond-the-floor HCl control	CO % Improvement Needed	MACT floor CO control	Beyond-the-floor CO control	Pb % Improvement Needed	MACT floor Pb control	Beyond-the-floor Pb control
130	130	Department of Veterans Affairs Medical Center		1009%	add caustic	add more caustic	-66%	none	no additional control	9151%	add FF	improve FF performance
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		-61%	none	no additional control	-21%	none	no additional control	5980%	add FF	improve FF performance
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		-23%	none	no additional control	521%	secondary chamber retrofit	add natural gas	1968%	add FF	improve FF performance
18	18	Franklin Square Hospital Center		-18%	none	no additional control	182%	secondary chamber retrofit	add natural gas	1537%	add FF	improve FF performance
21	21	Washington County Hospital		248%	add packed-bed scrubber	add caustic	248%	secondary chamber retrofit	add natural gas	923%	add FF	improve FF performance
25	25	Holy Spirit Hospital		-59%	none	no additional control	-1.1%	none	no additional control	869%	add FF	improve FF performance
30	30	Riddle Memorial Hospital		17%	none	add caustic	-26%	none	no additional control	1014%	add FF	improve FF performance
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		-29%	none	no additional control	11%	none	increase natural gas	841%	add FF	improve FF performance
38	38	Wilkes-Barre General Hospital		397%	add packed-bed scrubber	add caustic	9.6%	none	increase natural gas	-75%	none	no additional control
41	41	Thomas Memorial Hospital		46%	add caustic	add more caustic	-50%	none	no additional control	4420%	add FF	improve FF performance
47	47	Malcolm Randall Veterans Affairs Medical Center		161%	add packed-bed scrubber	add caustic	510%	secondary chamber retrofit	add natural gas	1321%	add FF	improve FF performance
63	63	St. Jude Children's Research Hospital		1430%	add packed-bed scrubber	add caustic	-64%	none	no additional control	-70%	none	no additional control
81	81	South Bend Medical Foundation		584%	add packed-bed scrubber	add caustic	8.6%	none	increase natural gas	3267%	add FF	improve FF performance
82	82	Good Samaritan Hospital		-12%	none	no additional control	0.4%	none	minor adjustment (marginal difference in CO)	63%	add FF	improve FF performance
88	88	Medina General Hospital		83%	add caustic	add more caustic	640%	secondary chamber retrofit	add natural gas	4084%	add FF	improve FF performance
95	95	St. Joseph's Hospital		193%	add packed-bed scrubber	add caustic	13%	none	increase natural gas	-75%	none	no additional control
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	-75%	none	no additional control	3.5%	none	increase natural gas	523%	add FF	improve FF performance
111	111	Wyoming Medical Center		-35%	none	no additional control	73%	increase natural gas	add more natural gas	210%	add FF	improve FF performance
86	86	Fairfield Medical Center		-43%	none	no additional control	19%	none	add natural gas	904%	none	add DIFF
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	-28%	none	no additional control	537%	secondary chamber retrofit	add natural gas	354%	none	add DIFF
115	115	Kona Community Hospital		2890%	none	add packed-bed scrubber	-15%	none	no additional control	25%	none	add FF



**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Cd % Improvement Needed	MACT floor Cd control	Beyond-the-floor Cd control	Hg % Improvement Needed	MACT floor Hg control	Beyond-the-floor Hg control	PM % Improvement Needed	MACT floor PM control	Beyond-the-floor PM control
1	1	Bristol-Myers Squibb Co.		2934%	none	improve FF performance	-25%	none	no additional control	-62%	none	no additional control
5	5	Merck & Company, Inc.		2111%	none	replace FF	280%	none	increase activated carbon	-31%	none	no additional control
15	15--1	Curtis Bay Energy	Unit 1	639%	none	replace FF	18642%	add ACI	increase activated carbon	71%	improve FF performance	replace FF
15	15--2	Curtis Bay Energy	Unit 2	984%	none	replace FF	32165%	add ACI	increase activated carbon	-15%	none	no additional control
20	20--1	Fort Detrick	Unit 5	8163%	add FF	improve FF performance	249%	none	increase activated carbon	50%	add FF	improve FF performance
20	20--2	Fort Detrick	Unit 6	7123%	add FF	improve FF performance	729%	none	increase activated carbon	61%	add FF	improve FF performance
29	29	Hamot Medical Center		895%	none	replace FF	330%	none	further increase activated carbon	-64%	none	no additional control
36	36--1	Merck & Company, Inc.	Unit 2	611%	none	replace FF	228%	none	increase activated carbon	-68%	none	no additional control
36	36--2	Merck & Company, Inc.	Unit 5	1920%	none	replace FF	1419%	add ACI	increase activated carbon	-47%	none	no additional control
40	40	Charleston Area Medical Center, General Hospital		1446%	none	replace FF	349%	none	increase activated carbon	-78%	none	no additional control
42	42	Stericycle, Inc.		7281%	replace FF	improve FF performance	1321%	increase activated carbon	further increase activated carbon	-58%	none	no additional control
43	43	Boca Raton Community Hospital		4378%	add FF	improve FF performance	1175%	add ACI	increase activated carbon	117%	add FF	improve FF performance
44	44	Bethesda Memorial Hospital		7645%	add FF	improve FF performance	7846%	add ACI	increase activated carbon	100%	add FF	improve FF performance
46	46	Holy Cross Hospital		13893%	add FF	improve FF performance	5318%	add ACI	increase activated carbon	114%	add FF	improve FF performance
48	48	Memorial Regional Hospital		4570%	increase pressure drop	improve FF performance	302%	none	increase activated carbon	103%	add FF	improve FF performance
51	51	Lakeland Regional Medical Center		2940%	none	improve FF performance	162%	none	increase activated carbon	-47%	none	no additional control
54	54	Bayfront Medical Center		3062%	none	improve FF performance	37%	none	increase activated carbon	13%	none	improve FF performance

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Cd % Improvement Needed	MACT floor Cd control	Beyond-the-floor Cd control	Hg % Improvement Needed	MACT floor Hg control	Beyond-the-floor Hg control	PM % Improvement Needed	MACT floor PM control	Beyond-the-floor PM control
55	55	St. Joseph's Hospital		1606%	none	improve FF performance	685%	none	increase activated carbon	-77%	none	no additional control
59	59--1	Stericycle, Inc.	Unit 1	19308%	add FF	improve FF performance	4080%	add ACI	increase activated carbon	49%	add FF	improve FF performance
59	59--2	Stericycle, Inc.	Unit 2	15569%	add FF	improve FF performance	12574%	add ACI	increase activated carbon	112%	add FF	improve FF performance
60	60--1	BMWNC, Inc.	Unit 1	344%	none	replace FF	6325%	increase activated carbon	further increase activated carbon	5%	none	improve FF performance
65	65--1	Stericycle, Inc.	Unit 1	4664%	add FF	improve FF performance	44485%	add ACI	increase activated carbon	92%	add FF	improve FF performance
65	65--2	Stericycle, Inc.	Unit 2	10158%	add FF	improve FF performance	40414%	add ACI	increase activated carbon	83%	add FF	improve FF performance
71	71	Loyola University Medical Center		12605%	add FF	improve FF performance	1867%	add ACI	increase activated carbon	118%	add FF	improve FF performance
77	77	Parkview Hospital		66693%	add FF	improve FF performance	569%	none	increase activated carbon	127%	add FF	improve FF performance
84	84	Mayo Clinic, Waste Management Facility		8294%	replace FF	improve FF performance	4680%	increase activated carbon	further increase activated carbon	185%	replace FF	improve FF performance
87	87	MedCentral Health System, Mansfield Hospital		844%	none	improve FF performance	866%	none	further increase activated carbon	-26%	none	no additional control
94	94	Stericycle, Inc.		4268%	add FF	improve FF performance	25635%	add ACI	increase activated carbon	29%	increase pressure drop	improve FF performance
98	98--1	University of Texas Medical Branch		2384%	none	improve FF performance	5083%	increase activated carbon	further increase activated carbon	206%	add FF	improve FF performance
106	106	Stericycle, Inc.		3201%	none	improve FF performance	40274%	add ACI	increase activated carbon	73%	add FF	improve FF performance
109	109	Healthcare Environmental Services Inc.		2363%	none	improve FF performance	13738%	increase activated carbon	further increase activated carbon	27%	improve FF performance	improve FF performance
110	110	Stericycle, Inc.		1680%	none	improve FF performance	7924%	increase activated carbon	further increase activated carbon	-6.4%	none	no additional control
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	1003%	none	improve FF performance	1299%	increase activated carbon	further increase activated carbon	46%	replace FF	improve FF performance
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	641%	none	improve FF performance	501%	none	increase activated carbon	97%	replace FF	improve FF performance
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		-12%	none	no additional control	76%	none	increase activated carbon	-33%	none	no additional control

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Cd % Improvement Needed	MACT floor Cd control	Beyond-the-floor Cd control	Hg % Improvement Needed	MACT floor Hg control	Beyond-the-floor Hg control	PM % Improvement Needed	MACT floor PM control	Beyond-the-floor PM control
130	130	Department of Veterans Affairs Medical Center		4600%	add FF	improve FF performance	483%	none	add ACI	131%	add FF	improve FF performance
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		1622%	add FF	improve FF performance	1926%	add ACI	increase activated carbon	27%	increase pressure drop	improve FF performance
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		565%	add FF	improve FF performance	97%	none	increase activated carbon	197%	add FF	improve FF performance
18	18	Franklin Square Hospital Center		568%	add FF	improve FF performance	35%	none	increase activated carbon	158%	add FF	improve FF performance
21	21	Washington County Hospital		95%	add FF	improve FF performance	-58%	none	no additional control	99%	add FF	improve FF performance
25	25	Holy Spirit Hospital		518%	add FF	improve FF performance	73%	none	increase activated carbon	66%	add FF	improve FF performance
30	30	Riddle Memorial Hospital		-48%	none	no additional control	438%	increase activated carbon	further increase activated carbon	25%	increase pressure drop	improve FF performance
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		-43%	none	no additional control	-38%	none	no additional control	141%	add FF	improve FF performance
38	38	Wilkes-Barre General Hospital		-85%	none	no additional control	363%	increase activated carbon	further increase activated carbon	-60%	none	no additional control
41	41	Thomas Memorial Hospital		319%	add FF	improve FF performance	5341%	add ACI	increase activated carbon	164%	add FF	improve FF performance
47	47	Malcolm Randall Veterans Affairs Medical Center		1136%	add FF	improve FF performance	874%	add ACI	increase activated carbon	74%	add FF	improve FF performance
63	63	St. Jude Children's Research Hospital		-79%	none	no additional control	80%	none	further increase activated carbon	-49%	none	no additional control
81	81	South Bend Medical Foundation		-75%	none	no additional control	10215%	add ACI	increase activated carbon	17%	none	improve FF performance
82	82	Good Samaritan Hospital		-53%	none	no additional control	25%	none	increase activated carbon	38%	increase pressure drop	improve FF performance
88	88	Medina General Hospital		54%	add FF	improve FF performance	258%	none	increase activated carbon	170%	add FF	improve FF performance
95	95	St. Joseph's Hospital		-82%	none	no additional control	27%	none	further increase activated carbon	-70%	none	no additional control
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	8.9%	increase pressure drop	improve FF performance	56%	none	add ACI	118%	add FF	improve FF performance
111	111	Wyoming Medical Center		156%	add FF	improve FF performance	1083%	add ACI	increase activated carbon	-66%	none	no additional control
86	86	Fairfield Medical Center		-64%	none	no additional control	472%	add ACI	increase activated carbon	38%	none	add DIFF
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	-23%	none	no additional control	46%	none	add ACI	-23%	none	no additional control
115	115	Kona Community Hospital		216%	none	add FF	-61%	none	no additional control	-24%	none	no additional control



**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Total CDD/CDF % Improvement Needed	MACT floor CDD/CDF control	Beyond-the-floor CDD/CDF control	CDD/CDF TEQ % Improvement Needed	MACT floor TEQ control	Beyond-the-floor TEQ control	NO <sub>x</sub> % Improvement Needed	MACT floor NO <sub>x</sub> control
1	1	Bristol-Myers Squibb Co.		6045%	add ACI	increase activated carbon	4609%	add ACI	increase activated carbon	8.3%	none
5	5	Merck & Company, Inc.		2037%	add ACI	increase activated carbon	684%	add ACI	increase activated carbon	2.2%	none
15	15--1	Curtis Bay Energy	Unit 1	4512%	add ACI	increase activated carbon	3119%	add ACI	increase activated carbon	70%	add SNCR
15	15--2	Curtis Bay Energy	Unit 2	812%	add ACI	increase activated carbon	722%	add ACI	increase activated carbon	63%	add SNCR
20	20--1	Fort Detrick	Unit 5	14094%	add ACI	increase activated carbon	5345%	add ACI	increase activated carbon	9.6%	none
20	20--2	Fort Detrick	Unit 6	16115%	add ACI	increase activated carbon	8922%	add ACI	increase activated carbon	9.6%	none
29	29	Hamot Medical Center		1187%	increase activated carbon	further increase activated carbon	528%	increase activated carbon	further increase activated carbon	19%	none
36	36--1	Merck & Company, Inc.	Unit 2	518%	add ACI	increase activated carbon	216%	add ACI	increase activated carbon	-9.3%	none
36	36--2	Merck & Company, Inc.	Unit 5	1030%	add ACI	increase activated carbon	2098%	add ACI	increase activated carbon	-14%	none
40	40	Charleston Area Medical Center, General Hospital		119%	none	increase activated carbon	9.3%	none	increase activated carbon	-16%	none
42	42	Stericycle, Inc.		3945%	increase activated carbon	further increase activated carbon	5240%	increase activated carbon	further increase activated carbon	36%	minor adjustment (marginal difference in NO <sub>x</sub> )
43	43	Boca Raton Community Hospital		11189%	add ACI	increase activated carbon	5986%	add ACI	increase activated carbon	9.6%	none
44	44	Bethesda Memorial Hospital		8946%	add ACI	increase activated carbon	8514%	add ACI	increase activated carbon	-20%	none
46	46	Holy Cross Hospital		6157%	add ACI	increase activated carbon	15793%	add ACI	increase activated carbon	-38%	none
48	48	Memorial Regional Hospital		7957%	add ACI	increase activated carbon	9107%	add ACI	increase activated carbon	29%	minor adjustment (marginal difference in NO <sub>x</sub> )
51	51	Lakeland Regional Medical Center		11269%	add ACI	increase activated carbon	9110%	add ACI	increase activated carbon	-30%	none
54	54	Bayfront Medical Center		7659%	add ACI	increase activated carbon	5753%	add ACI	increase activated carbon	28%	minor adjustment (marginal difference in NO <sub>x</sub> )

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Total CDD/CDF % Improvement Needed	MACT floor CDD/CDF control	Beyond-the-floor CDD/CDF control	CDD/CDF TEQ % Improvement Needed	MACT floor TEQ control	Beyond-the-floor TEQ control	NO <sub>x</sub> % Improvement Needed	MACT floor NO <sub>x</sub> control
55	55	St. Joseph's Hospital		10927%	add ACI	increase activated carbon	9548%	add ACI	increase activated carbon	12%	none
59	59--1	Stericycle, Inc.	Unit 1	369%	add ACI	increase activated carbon	374%	add ACI	increase activated carbon	9.6%	none
59	59--2	Stericycle, Inc.	Unit 2	814%	add ACI	increase activated carbon	503%	add ACI	increase activated carbon	9.6%	none
60	60--1	BMWNC, Inc.	Unit 1	916%	increase activated carbon	further increase activated carbon	963%	increase activated carbon	further increase activated carbon	-5.8%	none
65	65--1	Stericycle, Inc.	Unit 1	106%	none	no additional control (meets TEQ)	-25%	none	no additional control	9.6%	none
65	65--2	Stericycle, Inc.	Unit 2	40%	none	no additional control (meets TEQ)	-9.9%	none	no additional control	9.6%	none
71	71	Loyola University Medical Center		11218%	add ACI	increase activated carbon	4402%	add ACI	increase activated carbon	-3.1%	none
77	77	Parkview Hospital		1083%	add ACI	increase activated carbon	541%	add ACI	increase activated carbon	9.6%	none
84	84	Mayo Clinic, Waste Management Facility		-41%	none	no additional control	-17%	none	no additional control	60%	add SNCR
87	87	MedCentral Health System, Mansfield Hospital		4868%	increase activated carbon	further increase activated carbon	3902%	increase activated carbon	further increase activated carbon	9.6%	none
94	94	Stericycle, Inc.		2356%	add ACI	increase activated carbon	2339%	add ACI	increase activated carbon	9.6%	none
98	98--1	University of Texas Medical Branch		16256%	increase activated carbon	further increase activated carbon	7443%	increase activated carbon	further increase activated carbon	-28%	none
106	106	Stericycle, Inc.		300%	none (meets TEQ)	increase activated carbon	26%	none	increase activated carbon	9.6%	none
109	109	Healthcare Environmental Services Inc.		2567%	increase activated carbon	further increase activated carbon	13842%	increase activated carbon	further increase activated carbon	88%	add SNCR
110	110	Stericycle, Inc.		461%	increase activated carbon	further increase activated carbon	489%	increase activated carbon	further increase activated carbon	107%	add SNCR
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	-17%	none	no additional control	-42%	none	no additional control	-34%	none
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	-75%	none	no additional control	-73%	none	no additional control	-20%	none
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		-37%	none	no additional control	-62%	none	no additional control	-39%	none

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Total CDD/CDF % Improvement Needed	MACT floor CDD/CDF control	Beyond-the-floor CDD/CDF control	CDD/CDF TEQ % Improvement Needed	MACT floor TEQ control	Beyond-the-floor TEQ control	NO <sub>x</sub> % Improvement Needed	MACT floor NO <sub>x</sub> control
130	130	Department of Veterans Affairs Medical Center		11%	none	add ACI	14%	none	add ACI	-26%	none
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		203%	add ACI	increase activated carbon	425%	add ACI	increase activated carbon	163%	none
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		1895%	add ACI	increase activated carbon	1456%	add ACI	increase activated carbon	131%	none
18	18	Franklin Square Hospital Center		26002%	add ACI	increase activated carbon	10163%	add ACI	increase activated carbon	123%	none
21	21	Washington County Hospital		21669%	add ACI	increase activated carbon	13471%	add ACI	increase activated carbon	177%	none
25	25	Holy Spirit Hospital		893%	add ACI	increase activated carbon	209%	add ACI	increase activated carbon	177%	none
30	30	Riddle Memorial Hospital		22253%	increase activated carbon	further increase activated carbon	14500%	increase activated carbon	further increase activated carbon	227%	none
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		-72%	none	no additional control	-70%	none	no additional control	177%	none
38	38	Wilkes-Barre General Hospital		4557%	increase activated carbon	further increase activated carbon	1885%	increase activated carbon	further increase activated carbon	177%	none
41	41	Thomas Memorial Hospital		-50%	none	no additional control	-56%	none	no additional control	148%	none
47	47	Malcolm Randall Veterans Affairs Medical Center		1181%	add ACI	increase activated carbon	1040%	add ACI	increase activated carbon	290%	none
63	63	St. Jude Children's Research Hospital		2502%	increase activated carbon	further increase activated carbon	1549%	increase activated carbon	further increase activated carbon	244%	none
81	81	South Bend Medical Foundation		1072%	add ACI	increase activated carbon	322%	add ACI	increase activated carbon	-61%	none
82	82	Good Samaritan Hospital		7863%	add ACI	increase activated carbon	897%	add ACI	increase activated carbon	177%	none
88	88	Medina General Hospital		4827%	add ACI	increase activated carbon	4621%	add ACI	increase activated carbon	177%	none
95	95	St. Joseph's Hospital		265%	increase activated carbon	further increase activated carbon	371%	increase activated carbon	further increase activated carbon	177%	none
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	-41%	none	no additional control	-69%	none	no additional control	236%	none
111	111	Wyoming Medical Center		21042%	add ACI	increase activated carbon	11401%	add ACI	increase activated carbon	270%	none
86	86	Fairfield Medical Center		725%	none	increase activated carbon	680%	none (meets total CDD/CDF)	increase activated carbon	177%	none
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	725%	none	none (meets TEQ)	-43%	none	no additional control	177%	none
115	115	Kona Community Hospital		256%	none	add ACI and DIFF	7626%	none	add ACI and DIFF	150%	none



**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> control	SO <sub>2</sub> % Improvement Needed	MACT floor SO <sub>2</sub> control	Beyond-the-floor SO <sub>2</sub> control	Consolidated MACT floor controls	APCD code with MACT floor controls
1	1	Bristol-Myers Squibb Co.		add SNCR	1474%	add packed-bed scrubber	add caustic	replace FF with DIFF; add packed-bed scrubber and ACI	FF/WS
5	5	Merck & Company, Inc.		add SNCR	43%	none	add packed-bed scrubber	improve FF performance, add ACI	DIFF
15	15--1	Curtis Bay Energy	Unit 1	increase NO <sub>x</sub> reagent	1109%	add packed-bed scrubber	add caustic	improve FF performance; add packed-bed scrubber, ACI, and SNCR	DIFF/WS
15	15--2	Curtis Bay Energy	Unit 2	increase NO <sub>x</sub> reagent	1729%	add packed-bed scrubber	add caustic	add packed-bed scrubber, ACI, and SNCR	DIFF/WS
20	20--1	Fort Detrick	Unit 5	add SNCR	50%	add caustic	add more caustic	add DIFF, caustic, and ACI	DIFF/WS
20	20--2	Fort Detrick	Unit 6	add SNCR	50%	add caustic	add more caustic	add DIFF, caustic, and ACI	DIFF/WS
29	29	Hamot Medical Center		add SNCR	46%	none	add caustic	add packed-bed scrubber; increase activated carbon	DIFF/WS
36	36--1	Merck & Company, Inc.	Unit 2	add SNCR	-41%	none	no additional control	add packed-bed scrubber and ACI	DIFF/WS
36	36--2	Merck & Company, Inc.	Unit 5	add SNCR	24%	none	add caustic	add packed-bed scrubber and ACI	DIFF/WS
40	40	Charleston Area Medical Center, General Hospital		add SNCR	9.0%	none	add caustic	increase natural gas; add packed-bed scrubber	DIFF/WS
42	42	Stericycle, Inc.		add SNCR	-21%	none	no additional control	secondary chamber retrofit; replace DIFF; add packed-bed scrubber; increase activated carbon; only minor adjustment of system to obtain additional NO <sub>x</sub> control (marginal difference in NO <sub>x</sub> )	DIFF/WS
43	43	Boca Raton Community Hospital		add SNCR	50%	add caustic	add more caustic	secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS
44	44	Bethesda Memorial Hospital		add SNCR	143%	add caustic	add caustic	add DIFF, caustic, and ACI	DIFF/WS
46	46	Holy Cross Hospital		add SNCR	-39%	none	no additional control	increase natural gas; add DIFF and ACI	DIFF/WS
48	48	Memorial Regional Hospital		add SNCR	79%	add caustic	add more caustic	add DIFF, caustic, and ACI; only minor adjustment of system to obtain additional NO <sub>x</sub> control (marginal difference in NO <sub>x</sub> )	DIFF/WS
51	51	Lakeland Regional Medical Center		add SNCR	12%	none	increase lime	secondary chamber retrofit; replace DIFF; increase lime; add ACI	DIFF
54	54	Bayfront Medical Center		add SNCR	-34%	none	no additional control	secondary chamber retrofit; add DIFF and ACI; only minor adjustment of system needed to obtain additional NO <sub>x</sub> control (marginal difference in NO <sub>x</sub> )	DIFF/WS

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> control	SO <sub>2</sub> % Improvement Needed	MACT floor SO <sub>2</sub> control	Beyond-the-floor SO <sub>2</sub> control	Consolidated MACT floor controls	APCD code with MACT floor controls
55	55	St. Joseph's Hospital		add SNCR	33%	none	add caustic	increase natural gas, replace DIFF; add packed-bed scrubber and ACI	DIFF/WS
59	59--1	Stericycle, Inc.	Unit 1	add SNCR	50%	add caustic	add more caustic	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS
59	59--2	Stericycle, Inc.	Unit 2	add SNCR	50%	add caustic	add more caustic	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS
60	60--1	BMWNC, Inc.	Unit 1	add SNCR	270%	add packed-bed scrubber	add caustic	secondary chamber retrofit; add packed-bed scrubber; increase activated carbon	DIFF/WS
65	65--1	Stericycle, Inc.	Unit 1	add SNCR	50%	add caustic	add more caustic	secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS
65	65--2	Stericycle, Inc.	Unit 2	add SNCR	50%	add caustic	add more caustic	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS
71	71	Loyola University Medical Center		add SNCR	-57%	none	no additional control	secondary chamber retrofit; add DIFF and ACI	DIFF/WS
77	77	Parkview Hospital		add SNCR	50%	add caustic	add more caustic	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS
84	84	Mayo Clinic, Waste Management Facility		increase NO <sub>x</sub> reagent	-24%	none	no additional control	replace DIFF; add packed-bed scrubber; increase activated carbon; add SNCR	DIFF/WS
87	87	MedCentral Health System, Mansfield Hospital		add SNCR	388%	add packed-bed scrubber	add caustic	increase natural gas; replace DIFF; add packed-bed scrubber; increase activated carbon	DIFF/WS
94	94	Stericycle, Inc.		add SNCR	50%	add caustic	add more caustic	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS
98	98--1	University of Texas Medical Branch		add SNCR	-41%	none	no additional control	add DIFF and ACI	DIFF/WS
106	106	Stericycle, Inc.		add SNCR	50%	add caustic	add more caustic	increase natural gas; add DIFF, caustic, and ACI	DIFF/WS
109	109	Healthcare Environmental Services Inc.		increase NO <sub>x</sub> reagent	961%	add packed-bed scrubber	add caustic	secondary chamber retrofit; replace DIFF; add packed-bed scrubber and SNCR; increase activated carbon	DIFF/WS
110	110	Stericycle, Inc.		increase NO <sub>x</sub> reagent	76%	increase sodium bicarbonate	add more sodium bicarbonate	secondary chamber retrofit; add FF; increase sodium bicarbonate and activated carbon; add SNCR	DIFF-ESP/WS
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	add SNCR	-36%	none	no additional control	increase natural gas; replace DIFF; add packed-bed scrubber; increase activated carbon	DIFF/WS
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	add SNCR	-76%	none	no additional control	replace DIFF; add packed-bed scrubber	DIFF/WS
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		add SNCR	-24%	none	no additional control	secondary chamber retrofit	CA/WS

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> control	SO <sub>2</sub> % Improvement Needed	MACT floor SO <sub>2</sub> control	Beyond-the-floor SO <sub>2</sub> control	Consolidated MACT floor controls	APCD code with MACT floor controls
130	130	Department of Veterans Affairs Medical Center		add SNCR	299%	add caustic	add more caustic	add DIFF and caustic	DIFF/WS
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		add SNCR	-40%	none	no additional control	add DIFF and ACI	DIFF/WS
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		add SNCR	269%	add caustic	add more caustic	secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS
18	18	Franklin Square Hospital Center		add SNCR	1294%	add packed-bed scrubber	add caustic	secondary chamber retrofit; add DIFF, packed-bed scrubber, and ACI	DIFF/WS
21	21	Washington County Hospital		add SNCR	351%	add packed-bed scrubber	add caustic	secondary chamber retrofit; add DIFF, packed-bed scrubber, and ACI	DIFF/WS
25	25	Holy Spirit Hospital		add SNCR	351%	add caustic	add more caustic	add DIFF, caustic, and ACI	DIFF/WS
30	30	Riddle Memorial Hospital		add SNCR	-57%	none	no additional control	add DIFF and ACI	DIFF/WS
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		add SNCR	56%	none	add packed-bed scrubber	add FF	FF/WS
38	38	Wilkes-Barre General Hospital		add SNCR	143%	none	add caustic	add packed-bed scrubber; increase activated carbon	DIFF/WS
41	41	Thomas Memorial Hospital		add SNCR	215%	none	add caustic	add DIFF, caustic, and ACI	DIFF/WS
47	47	Malcolm Randall Veterans Affairs Medical Center		add SNCR	225%	none	add caustic	secondary chamber retrofit; add DIFF, packed-bed scrubber, and ACI	DIFF/WS
63	63	St. Jude Children's Research Hospital		add SNCR	159%	none	add caustic	add packed-bed scrubber; increase activated carbon	DIFF/WS
81	81	South Bend Medical Foundation		add SNCR	1395%	add packed-bed scrubber	add caustic	add DIFF, packed-bed scrubber, and ACI	DIFF/WS
82	82	Good Samaritan Hospital		add SNCR	351%	add caustic	add more caustic	add DIFF, caustic, and ACI	DIFF/WS
88	88	Medina General Hospital		add SNCR	351%	add caustic	add more caustic	secondary chamber retrofit; add DIFF, caustic, and ACI	DIFF/WS
95	95	St. Joseph's Hospital		add SNCR	151%	none	add caustic	add packed-bed scrubber; increase activated carbon	DIFF/WS
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	add SNCR	20%	none	add caustic	add FF	FF/WS
111	111	Wyoming Medical Center		add SNCR	131%	none	add caustic	increase natural gas; add DIFF and ACI	DIFF/WS
86	86	Fairfield Medical Center		add SNCR	351%	add caustic	add more caustic	add caustic and ACI	WS
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	add SNCR	351%	add caustic	add more caustic	secondary chamber retrofit, add caustic	WS
115	115	Kona Community Hospital		add SNCR	351%	none	add caustic	none	CC

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> control	SO <sub>2</sub> % Improvement Needed	MACT floor SO <sub>2</sub> control	Beyond-the-floor SO <sub>2</sub> control	Consolidated MACT floor controls	APCD code with MACT floor controls
116	116	Yukon-Kuskokwim Delta Regional Hospital		add SNCR	2793%	none	add packed-bed scrubber	add DIFF and ACI	DIFF
<b>Total nationwide</b>									

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Consolidated beyond-the-floor controls	APCD code with MACT floor and BTF controls	Beyond-the-floor energy impacts, MMBtu/yr						
						Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF energy impacts	MACT floor and BTF energy impacts
1	1	Bristol-Myers Squibb Co.		improve FF performance; add caustic; increase activated carbon; add SNCR	FF/WS				3.6		3.6	290
5	5	Merck & Company, Inc.		replace DIFF (in place of improving FF performance); add packed-bed scrubber; increase activated carbon; add SNCR	DIFF/WS	287	537		3.6		827	827
15	15-1	Curtis Bay Energy	Unit 1	replace DIFF (in place of improving FF performance); add caustic; increase activated carbon and NO <sub>x</sub> reagent	DIFF/WS		537				537	827
15	15-2	Curtis Bay Energy	Unit 2	minor adjustment of system to obtain additional CO control (marginal difference in CO); replace DIFF; add caustic; increase activated carbon and NO <sub>x</sub> reagent	DIFF/WS		537				537	827
20	20-1	Fort Detrick	Unit 5	improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6		3.6	540
20	20-2	Fort Detrick	Unit 6	improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6		3.6	540
29	29	Hamot Medical Center		replace DIFF; add caustic; further increase activated carbon; add SNCR	DIFF/WS		537		3.6		540	827
36	36-1	Merck & Company, Inc.	Unit 2	replace DIFF; add caustic; increase activated carbon; add SNCR	DIFF/WS		537		3.6		540	827
36	36-2	Merck & Company, Inc.	Unit 5	replace DIFF; add caustic; increase activated carbon; add SNCR	DIFF/WS		537		3.6		540	827
40	40	Charleston Area Medical Center, General Hospital		add more natural gas; replace DIFF; add caustic; increase activated carbon; add SNCR	DIFF/WS		537		3.6	3,790	4,330	8,407
42	42	Stericycle, Inc.		add natural gas; improve FF performance; add caustic; further increase activated carbon; add SNCR (in place of minor adjustment of system)	DIFF/WS				3.6	3,790	3,794	7,871
43	43	Boca Raton Community Hospital		add natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	8,120
44	44	Bethesda Memorial Hospital		improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6		3.6	540
46	46	Holy Cross Hospital		secondary chamber retrofit (in place of increasing natural gas); improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS			0	3.6		3.6	4,330
48	48	Memorial Regional Hospital		improve FF performance; add more caustic; increase activated carbon; add SNCR (in place of minor adjustment of system)	DIFF/WS				3.6		3.6	540
51	51	Lakeland Regional Medical Center		add natural gas; improve FF performance; add packed-bed scrubber (in place of increasing lime); increase activated carbon; add SNCR	DIFF/WS	287			3.6	3,790	4,080	7,871
54	54	Bayfront Medical Center		add natural gas; improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	8,120

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Consolidated beyond-the-floor controls	APCD code with MACT floor and BTF controls	Beyond-the-floor energy impacts, MMBtu/yr						
						Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF energy impacts	MACT floor and BTF energy impacts
55	55	St. Joseph's Hospital		secondary chamber retrofit (in place of increasing natural gas); improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS			0	3.6		3.6	4,080
59	59--1	Stericycle, Inc.	Unit 1	add more natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	8,120
59	59--2	Stericycle, Inc.	Unit 2	add more natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	8,120
60	60--1	BMWNC, Inc.	Unit 1	add natural gas; replace DIFF; add caustic; further increase activated carbon; add SNCR	DIFF/WS		537		3.6	3,790	4,330	8,407
65	65--1	Stericycle, Inc.	Unit 1	add natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	8,120
65	65--2	Stericycle, Inc.	Unit 2	secondary chamber retrofit (in place of increasing natural gas); improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS			0	3.6		3.6	4
71	71	Loyola University Medical Center		add natural gas; improve FF performance; add packed-bed scrubber; increase activated carbon; add SNCR	DIFF/WS	287			3.6	3,790	4,080	8,407
77	77	Parkview Hospital		secondary chamber retrofit (in place of increasing natural gas); improve FF performance; add packed-bed scrubber (in place of adding caustic); increase activated carbon; add SNCR	DIFF/WS	287		0	3.6		290	4,617
84	84	Mayo Clinic, Waste Management Facility		improve FF performance; add caustic; further increase activated carbon; increase NO <sub>x</sub> reagent	DIFF/WS						0	290
87	87	MedCentral Health System, Mansfield Hospital		add more natural gas; improve FF performance; add caustic; further increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	7,871
94	94	Stericycle, Inc.		add more natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	8,120
98	98--1	University of Texas Medical Branch		improve FF performance; add caustic; further increase activated carbon; add SNCR	DIFF/WS				3.6		3.6	540
106	106	Stericycle, Inc.		add more natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	8,120
109	109	Healthcare Environmental Services Inc.		add natural gas; improve FF performance; add caustic; further increase activated carbon; increase NO <sub>x</sub> reagent	DIFF/WS					3,790	3,790	7,871
110	110	Stericycle, Inc.		add natural gas; improve FF performance; add more sodium bicarbonate; further increase activated carbon; increase NO <sub>x</sub> reagent	DIFF-ESP/WS					3,790	3,790	8,120
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1	add more natural gas; improve FF performance; add caustic; further increase activated carbon; add SNCR	DIFF/WS				3.6	3,790	3,794	7,871
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2	improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS				3.6		3.6	290
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant		add natural gas and caustic; increase activated carbon; add SNCR	CA/WS				3.6	3,790	3,794	7,584

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Consolidated beyond-the-floor controls	APCD code with MACT floor and BTF controls	Beyond-the-floor energy impacts, MMBtu/yr						
						Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF energy impacts	MACT floor and BTF energy impacts
130	130	Department of Veterans Affairs Medical Center		improve FF performance; add more caustic; add ACI and SNCR	DIFF/WS				3.6		3.6	540
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility		improve FF performance; increase activated carbon; add SNCR	DIFF/WS				0.4		0.4	91
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment		add natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	1,228
18	18	Franklin Square Hospital Center		add natural gas; improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	1,271
21	21	Washington County Hospital		add natural gas; improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	1,271
25	25	Holy Spirit Hospital		improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				0.4		0	91
30	30	Riddle Memorial Hospital		improve FF performance; add caustic; further increase activated carbon; add SNCR	DIFF/WS				0.4		0.4	91
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		increase natural gas; improve FF performance; add packed-bed scrubber; add SNCR	FF/WS	43			0.4	569	612	702
38	38	Wilkes-Barre General Hospital		increase natural gas; add caustic; further increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	612
41	41	Thomas Memorial Hospital		improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				0.4		0.4	91
47	47	Malcolm Randall Veterans Affairs Medical Center		add natural gas; improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	1,271
63	63	St. Jude Children's Research Hospital		add caustic; further increase activated carbon; add SNCR	DIFF/WS				0.4		0.4	43
81	81	South Bend Medical Foundation		increase natural gas; improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	702
82	82	Good Samaritan Hospital		minor adjustment of system to obtain additional CO control (marginal difference in CO); improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				0.4		0	91
88	88	Medina General Hospital		add natural gas; improve FF performance; add more caustic; increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	1,228
95	95	St. Joseph's Hospital		increase natural gas; add caustic; further increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	612
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	increase natural gas; add DIFF (in place of FF); improve FF performance; add caustic, ACI, and SNCR	DIFF/WS		0		0.4	569	569	659
111	111	Wyoming Medical Center		add more natural gas; improve FF performance; add caustic; increase activated carbon; add SNCR	DIFF/WS				0.4	569	569	1,228
86	86	Fairfield Medical Center		increase natural gas; add DIFF; add more caustic; increase activated carbon; add SNCR	DIFF/WS		108		0.2	569	677	677
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	increase natural gas; add DIFF; add more caustic; add ACI and SNCR	DIFF/WS		108		0.2	569	677	1,245
115	115	Kona Community Hospital		add DIFF, packed-bed scrubber, ACI, and SNCR	DIFF/WS	12	32		0.08		44	44

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Consolidated beyond-the-floor controls	APCD code with MACT floor and BTF controls	Beyond-the-floor energy impacts, MMBtu/yr						
						Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF energy impacts	MACT floor and BTF energy impacts
116	116	Yukon-Kuskokwim Delta Regional Hospital		improve FF performance; add packed-bed scrubber; increase activated carbon; add SNCR	DIFF/WS	12			0.08		12	44
<b>Total nationwide</b>						1,214	4,541	0	119	71,823	77,697	172,517

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor solid waste impacts, tpy						Beyond-the-floor wastewater impacts, gpy			
				DIFF	ACI	Increase carbon	Increase NaHCO <sub>3</sub>	Total BTF solid waste impacts	MACT floor and BTF solid waste impacts	Packed-bed scrubber	Increase caustic	Total BTF wastewater impacts	MACT floor and BTF wastewater impacts
1	1	Bristol-Myers Squibb Co.				15		15	214		6,533	6,533	13,066
5	5	Merck & Company, Inc.		194		15		209	224	6,533		6,533	6,533
15	15--1	Curtis Bay Energy	Unit 1	194		15		209	224		6,533	6,533	13,066
15	15--2	Curtis Bay Energy	Unit 2	194		15		209	224		6,533	6,533	13,066
20	20--1	Fort Detrick	Unit 5			15		15	224		6,533	6,533	13,066
20	20--2	Fort Detrick	Unit 6			15		15	224		6,533	6,533	13,066
29	29	Hamot Medical Center		194		15		209	224		6,533	6,533	13,066
36	36--1	Merck & Company, Inc.	Unit 2	194		15		209	224		6,533	6,533	13,066
36	36--2	Merck & Company, Inc.	Unit 5	194		15		209	224		6,533	6,533	13,066
40	40	Charleston Area Medical Center, General Hospital		194		15		209	209		6,533	6,533	13,066
42	42	Stericycle, Inc.				15		15	30		6,533	6,533	13,066
43	43	Boca Raton Community Hospital				15		15	224		6,533	6,533	13,066
44	44	Bethesda Memorial Hospital				15		15	224		6,533	6,533	13,066
46	46	Holy Cross Hospital				15		15	224		6,533	6,533	6,533
48	48	Memorial Regional Hospital				15		15	224		6,533	6,533	13,066
51	51	Lakeland Regional Medical Center				15		15	214	6,533		6,533	6,533
54	54	Bayfront Medical Center				15		15	224		6,533	6,533	6,533

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor solid waste impacts, tpy						Beyond-the-floor wastewater impacts, gpy			
				DIFF	ACI	Increase carbon	Increase NaHCO <sub>3</sub>	Total BTF solid waste impacts	MACT floor and BTF solid waste impacts	Packed-bed scrubber	Increase caustic	Total BTF wastewater impacts	MACT floor and BTF wastewater impacts
55	55	St. Joseph's Hospital				15		15	30		6,533	6,533	13,066
59	59--1	Stericycle, Inc.	Unit 1			15		15	224		6,533	6,533	13,066
59	59--2	Stericycle, Inc.	Unit 2			15		15	224		6,533	6,533	13,066
60	60--1	BMWNC, Inc.	Unit 1	194		15		209	224		6,533	6,533	13,066
65	65--1	Stericycle, Inc.	Unit 1			15		15	224		6,533	6,533	13,066
65	65--2	Stericycle, Inc.	Unit 2			15		15	224		6,533	6,533	13,066
71	71	Loyola University Medical Center				15		15	224	6,533		6,533	6,533
77	77	Parkview Hospital				15		15	224	0		0	6,533
84	84	Mayo Clinic, Waste Management Facility				15		15	30		6,533	6,533	13,066
87	87	MedCentral Health System, Mansfield Hospital				15		15	30		6,533	6,533	13,066
94	94	Stericycle, Inc.				15		15	224		6,533	6,533	13,066
98	98--1	University of Texas Medical Branch				15		15	224		6,533	6,533	6,533
106	106	Stericycle, Inc.				15		15	224		6,533	6,533	13,066
109	109	Healthcare Environmental Services Inc.				15		15	30		6,533	6,533	13,066
110	110	Stericycle, Inc.				15	135	150	310			0	0
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1			15		15	30		6,533	6,533	13,066
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2			15		15	15		6,533	6,533	13,066
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant				15		15	15		6,533	6,533	6,533

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor solid waste impacts, tpy						Beyond-the-floor wastewater impacts, gpy			
				DIFF	ACI	Increase carbon	Increase NaHCO <sub>3</sub>	Total BTF solid waste impacts	MACT floor and BTF solid waste impacts	Packed-bed scrubber	Increase caustic	Total BTF wastewater impacts	MACT floor and BTF wastewater impacts
130	130	Department of Veterans Affairs Medical Center			15			15	209		6,533	6,533	13,066
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility				2.3		2.3	12			0	0
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment				2.3		2.3	12		353	353	706
18	18	Franklin Square Hospital Center				2.3		2.3	12		353	353	706
21	21	Washington County Hospital				2.3		2.3	12		353	353	706
25	25	Holy Spirit Hospital				2.3		2.3	12		353	353	706
30	30	Riddle Memorial Hospital				2.3		2.3	12		353	353	353
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator						0	2.3	353		353	353
38	38	Wilkes-Barre General Hospital				2.3		2.3	4.6		353	353	706
41	41	Thomas Memorial Hospital				2.3		2.3	12		353	353	706
47	47	Malcolm Randall Veterans Affairs Medical Center				2.3		2.3	12		353	353	706
63	63	St. Jude Children's Research Hospital				2.3		2.3	4.6		353	353	706
81	81	South Bend Medical Foundation				2.3		2.3	12		353	353	706
82	82	Good Samaritan Hospital				2.3		2.3	12		353	353	706
88	88	Medina General Hospital				2.3		2.3	12		353	353	706
95	95	St. Joseph's Hospital				2.3		2.3	4.6		353	353	706
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1	4.9	2.3			7	10		353	353	353
111	111	Wyoming Medical Center				2.3		2.3	12		353	353	353
86	86	Fairfield Medical Center		4.8		2.3		7.1	9.4		47	47	94
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3	4.8	2.3			7.1	7.1		47	47	94
115	115	Kona Community Hospital		1.8	0.6			2.3	2.3	2,156		2,156	2,156

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor solid waste impacts, tpy					Beyond-the-floor wastewater impacts, gpy				
				DIFF	ACI	Increase carbon	Increase NaHCO <sub>3</sub>	Total BTF solid waste impacts	MACT floor and BTF solid waste impacts	Packed-bed scrubber	Increase caustic	Total BTF wastewater impacts	MACT floor and BTF wastewater impacts
116	116	Yukon-Kuskokwim Delta Regional Hospital				0.6		0.6	2.9	2,156		2,156	2,156
<b>Total nationwide</b>				1,565	20	571	135	2,290	6,710	24,264	207,912	232,176	419,431

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor PM secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF PM secondary emissions	MACT floor and BTF PM secondary emissions
1	1	Bristol-Myers Squibb Co.					0.06		0.06	4.7
5	5	Merck & Company, Inc.		4.7	8.8		0.06		13	13
15	15--1	Curtis Bay Energy	Unit 1		8.8				8.8	13
15	15--2	Curtis Bay Energy	Unit 2		8.8				8.8	13
20	20--1	Fort Detrick	Unit 5				0.06		0.06	8.8
20	20--2	Fort Detrick	Unit 6				0.06		0.06	8.8
29	29	Hamot Medical Center			8.8		0.06		8.8	13
36	36--1	Merck & Company, Inc.	Unit 2		8.8		0.06		8.8	13
36	36--2	Merck & Company, Inc.	Unit 5		8.8		0.06		8.8	13
40	40	Charleston Area Medical Center, General Hospital			8.8		0.06	7.2	16	28
42	42	Stericycle, Inc.					0.06	7.2	7.3	19
43	43	Boca Raton Community Hospital					0.06	7.2	7.3	23
44	44	Bethesda Memorial Hospital					0.06		0.06	8.8
46	46	Holy Cross Hospital				0	0.06		0.06	16
48	48	Memorial Regional Hospital					0.06		0.06	8.8
51	51	Lakeland Regional Medical Center		4.7			0.06	7.2	12	19
54	54	Bayfront Medical Center					0.06	7.2	7.3	551

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor PM secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF PM secondary emissions	MACT floor and BTF PM secondary emissions
55	55	St. Joseph's Hospital				0	0.06		0.06	11.9
59	59--1	Stericycle, Inc.	Unit 1				0.06	7.2	7.3	23
59	59--2	Stericycle, Inc.	Unit 2				0.06	7.2	7.3	23
60	60--1	BMWNC, Inc.	Unit 1		8.8		0.06	7.2	16	28
65	65--1	Stericycle, Inc.	Unit 1				0.06	7.2	7.3	23
65	65--2	Stericycle, Inc.	Unit 2			0	0.06		0.06	16
71	71	Loyola University Medical Center		4.7			0.06	7.2	12	28
77	77	Parkview Hospital		4.7		0	0.06		4.7	21
84	84	Mayo Clinic, Waste Management Facility							0	4.7
87	87	MedCentral Health System, Mansfield Hospital					0.06	7.2	7.3	19
94	94	Stericycle, Inc.					0.06	7.2	7.3	23
98	98--1	University of Texas Medical Branch					0.06		0.06	8.8
106	106	Stericycle, Inc.					0.06	7.2	7.3	23
109	109	Healthcare Environmental Services Inc.						7.2	7.2	19
110	110	Stericycle, Inc.						7.2	7.2	23
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1				0.06	7.2	7.3	19
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2				0.06		0.06	4.7
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant					0.06	7.2	7.3	14

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor PM secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF PM secondary emissions	MACT floor and BTF PM secondary emissions
130	130	Department of Veterans Affairs Medical Center					0.06		0.06	8.8
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility					0.007		0.007	1.5
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment					0.007	1.1	1.1	3.6
18	18	Franklin Square Hospital Center					0.007	1.1	1.1	4.3
21	21	Washington County Hospital					0.007	1.1	1.1	4.3
25	25	Holy Spirit Hospital					0.007		0.007	1.5
30	30	Riddle Memorial Hospital					0.007		0.007	1.5
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		0.7			0.007	1.1	1.8	3.3
38	38	Wilkes-Barre General Hospital					0.007	1.1	1.1	1.8
41	41	Thomas Memorial Hospital					0.007		0.007	1.5
47	47	Malcolm Randall Veterans Affairs Medical Center					0.007	1.1	1.1	4.3
63	63	St. Jude Children's Research Hospital					0.007		0.007	0.7
81	81	South Bend Medical Foundation					0.007	1.1	1.09	3.3
82	82	Good Samaritan Hospital					0.007		0.007	1.5
88	88	Medina General Hospital					0.007	1.1	1.1	3.6
95	95	St. Joseph's Hospital					0.007	1.1	1.1	1.8
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1		0		0.007	1.1	1.1	2.6
111	111	Wyoming Medical Center					0.007	1.1	1.1	3.6
86	86	Fairfield Medical Center			1.8		0.003	1.1	2.8	2.8
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3		1.8		0.003	1.1	2.8	3.9
115	115	Kona Community Hospital		0.2	0.5		0.001		0.7	0.7

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor PM secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF PM secondary emissions	MACT floor and BTF PM secondary emissions
116	116	Yukon-Kuskokwim Delta Regional Hospital		0.2			0.001		0.2	0.7
<b>Total nationwide</b>				<b>20</b>	<b>74</b>	<b>0</b>	<b>1.9</b>	<b>136</b>	<b>232</b>	<b>1,173</b>

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor CO secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF CO secondary emissions	MACT floor and BTF CO secondary emissions
1	1	Bristol-Myers Squibb Co.					0.4		0.4	34
5	5	Merck & Company, Inc.		34	64		0.4		98	98
15	15--1	Curtis Bay Energy	Unit 1		64				64	98
15	15--2	Curtis Bay Energy	Unit 2		64				64	98
20	20--1	Fort Detrick	Unit 5				0.4		0.4	64
20	20--2	Fort Detrick	Unit 6				0.4		0.4	64
29	29	Hamot Medical Center			64		0.4		64	98
36	36--1	Merck & Company, Inc.	Unit 2		64		0.4		64	98
36	36--2	Merck & Company, Inc.	Unit 5		64		0.4		64	98
40	40	Charleston Area Medical Center, General Hospital			64		0.4	318	383	735
42	42	Stericycle, Inc.					0.4	318	319	671
43	43	Boca Raton Community Hospital					0.4	318	319	701
44	44	Bethesda Memorial Hospital					0.4		0.4	64
46	46	Holy Cross Hospital				0	0.4		0.4	383
48	48	Memorial Regional Hospital					0.4		0.4	64
51	51	Lakeland Regional Medical Center		34			0.4	318	353	671
54	54	Bayfront Medical Center					0.4	318	319	701

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor CO secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF CO secondary emissions	MACT floor and BTF CO secondary emissions
55	55	St. Joseph's Hospital				0	0.4		0.4	353
59	59--1	Stericycle, Inc.	Unit 1				0.4	318	319	701
59	59--2	Stericycle, Inc.	Unit 2				0.4	318	319	701
60	60--1	BMWNC, Inc.	Unit 1		64		0.4	318	383	735
65	65--1	Stericycle, Inc.	Unit 1				0.4	318	319	701
65	65--2	Stericycle, Inc.	Unit 2			0	0.4		0.4	383
71	71	Loyola University Medical Center		34			0.4	318	353	735
77	77	Parkview Hospital		34		0	0.4		34	417
84	84	Mayo Clinic, Waste Management Facility							0	34
87	87	MedCentral Health System, Mansfield Hospital					0.4	318	319	671
94	94	Stericycle, Inc.					0.4	318	319	701
98	98--1	University of Texas Medical Branch					0.4		0.4	64
106	106	Stericycle, Inc.					0.4	318	319	701
109	109	Healthcare Environmental Services Inc.						318	318	671
110	110	Stericycle, Inc.						318	318	701
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1				0.4	318	319	671
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2				0.4		0.4	34
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant					0.4	318	319	637

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor CO secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF CO secondary emissions	MACT floor and BTF CO secondary emissions
130	130	Department of Veterans Affairs Medical Center					0.4		0.4	64
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility					0.05		0.05	11
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment					0.05	48	48	106
18	18	Franklin Square Hospital Center					0.05	48	48	111
21	21	Washington County Hospital					0.05	48	48	111
25	25	Holy Spirit Hospital					0.05		0.05	11
30	30	Riddle Memorial Hospital					0.05		0.05	11
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		5.1			0.05	48	53	64
38	38	Wilkes-Barre General Hospital					0.05	48	48	53
41	41	Thomas Memorial Hospital					0.05		0.05	11
47	47	Malcolm Randall Veterans Affairs Medical Center					0.05	48	48	111
63	63	St. Jude Children's Research Hospital					0.05		0.05	5.2
81	81	South Bend Medical Foundation					0.05	48	48	64
82	82	Good Samaritan Hospital					0.05		0.05	11
88	88	Medina General Hospital					0.05	48	48	106
95	95	St. Joseph's Hospital					0.05	48	48	53
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1		0		0.05	48	48	59
111	111	Wyoming Medical Center					0.05	48	48	106
86	86	Fairfield Medical Center			13		0.02	48	61	61
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3		13		0.02	48	61	108
115	115	Kona Community Hospital		1.5	3.7		0.009		5.2	5.2

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor CO secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF CO secondary emissions	MACT floor and BTF CO secondary emissions
116	116	Yukon-Kuskokwim Delta Regional Hospital		1.5			0.009		1.5	5.2
<b>Total nationwide</b>				144	540	0	14	6,033	6,731	15,602

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF NO <sub>x</sub> secondary emissions	MACT floor and BTF NO <sub>x</sub> secondary emissions
1	1	Bristol-Myers Squibb Co.					0.2		0.2	17
5	5	Merck & Company, Inc.		17	32		0.2		50	50
15	15--1	Curtis Bay Energy	Unit 1		32				32	50
15	15--2	Curtis Bay Energy	Unit 2		32				32	50
20	20--1	Fort Detrick	Unit 5				0.2		0.2	32
20	20--2	Fort Detrick	Unit 6				0.2		0.2	32
29	29	Hamot Medical Center			32		0.2		32	50
36	36--1	Merck & Company, Inc.	Unit 2		32		0.2		32	50
36	36--2	Merck & Company, Inc.	Unit 5		32		0.2		32	50
40	40	Charleston Area Medical Center, General Hospital			32		0.2	379	411	808
42	42	Stericycle, Inc.					0.2	379	379	775
43	43	Boca Raton Community Hospital					0.2	379	379	790
44	44	Bethesda Memorial Hospital					0.2		0.2	32
46	46	Holy Cross Hospital				0	0.2		0.2	411
48	48	Memorial Regional Hospital					0.2		0.2	32
51	51	Lakeland Regional Medical Center		17			0.2	379	396	775
54	54	Bayfront Medical Center					0.2	379	379	790

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF NO <sub>x</sub> secondary emissions	MACT floor and BTF NO <sub>x</sub> secondary emissions
55	55	St. Joseph's Hospital				0	0.2		0.2	396
59	59--1	Stericycle, Inc.	Unit 1				0.2	379	379	790
59	59--2	Stericycle, Inc.	Unit 2				0.2	379	379	790
60	60--1	BMWNC, Inc.	Unit 1		32		0.2	379	411	808
65	65--1	Stericycle, Inc.	Unit 1				0.2	379	379	790
65	65--2	Stericycle, Inc.	Unit 2			0	0.2		0.2	411
71	71	Loyola University Medical Center		17			0.2	379	396	808
77	77	Parkview Hospital		17		0	0.2		17	429
84	84	Mayo Clinic, Waste Management Facility							0	17
87	87	MedCentral Health System, Mansfield Hospital					0.2	379	379	775
94	94	Stericycle, Inc.					0.2	379	379	790
98	98--1	University of Texas Medical Branch					0.2		0.2	32
106	106	Stericycle, Inc.					0.2	379	379	790
109	109	Healthcare Environmental Services Inc.						379	379	775
110	110	Stericycle, Inc.						379	379	790
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1				0.2	379	379	775
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2				0.2		0.2	17
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant					0.2	379	379	758

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF NO <sub>x</sub> secondary emissions	MACT floor and BTF NO <sub>x</sub> secondary emissions
130	130	Department of Veterans Affairs Medical Center					0.2		0.2	32
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility					0.02		0.02	5.5
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment					0.02	57	57	119
18	18	Franklin Square Hospital Center					0.02	57	57	122
21	21	Washington County Hospital					0.02	57	57	122
25	25	Holy Spirit Hospital					0.02		0.02	5.5
30	30	Riddle Memorial Hospital					0.02		0.02	5.5
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		2.6			0.02	57	59	65
38	38	Wilkes-Barre General Hospital					0.02	57	57	59
41	41	Thomas Memorial Hospital					0.02		0.02	5.5
47	47	Malcolm Randall Veterans Affairs Medical Center					0.02	57	57	122
63	63	St. Jude Children's Research Hospital					0.02		0.02	2.6
81	81	South Bend Medical Foundation					0.02	57	57	65
82	82	Good Samaritan Hospital					0.02		0.02	5.5
88	88	Medina General Hospital					0.02	57	57	119
95	95	St. Joseph's Hospital					0.02	57	57	59
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1		0		0.02	57	57	62
111	111	Wyoming Medical Center					0.02	57	57	119
86	86	Fairfield Medical Center			6.5		0.01	57	63.4	63
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3		6.5		0.01	57	63.4	120
115	115	Kona Community Hospital		0.7	1.9		0.005		2.6	2.6

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor NO <sub>x</sub> secondary emissions, lb/yr						
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF NO <sub>x</sub> secondary emissions	MACT floor and BTF NO <sub>x</sub> secondary emissions
116	116	Yukon-Kuskokwim Delta Regional Hospital		0.7			0.005		0.7	2.6
<b>Total nationwide</b>				<b>73</b>	<b>273</b>	<b>0</b>	<b>7.2</b>	<b>7,182</b>	<b>7,535</b>	<b>16,828</b>

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor SO <sub>2</sub> secondary emissions, lb/yr							Total BTF secondary emissions, lb/yr	Total MACT floor and BTF secondary emissions, lb/yr
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF SO <sub>2</sub> secondary emissions	MACT floor and BTF SO <sub>2</sub> secondary emissions		
1	1	Bristol-Myers Squibb Co.					0.4		0.4	34	1.1	91
5	5	Merck & Company, Inc.		34	63		0.4		97	97	258	258
15	15--1	Curtis Bay Energy	Unit 1		63				63	97	168	258
15	15--2	Curtis Bay Energy	Unit 2		63				63	97	168	258
20	20--1	Fort Detrick	Unit 5				0.4		0.4	63	1.1	169
20	20--2	Fort Detrick	Unit 6				0.4		0.4	63	1.1	169
29	29	Hamot Medical Center			63		0.4		63	97	169	258
36	36--1	Merck & Company, Inc.	Unit 2		63		0.4		63	97	169	258
36	36--2	Merck & Company, Inc.	Unit 5		63		0.4		63	97	169	258
40	40	Charleston Area Medical Center, General Hospital			63		0.4	2.3	66	102	876	1,672
42	42	Stericycle, Inc.					0.4	2.3	2.7	39	708	1,504
43	43	Boca Raton Community Hospital					0.4	2.3	2.7	68	708	1,583
44	44	Bethesda Memorial Hospital					0.4		0.4	63	1.1	169
46	46	Holy Cross Hospital				0	0.4		0.4	66	1.1	876
48	48	Memorial Regional Hospital					0.4		0.4	63	1.1	169
51	51	Lakeland Regional Medical Center		34			0.4	2.3	36	39	798	1,504
54	54	Bayfront Medical Center					0.4	2.3	2.7	68	708	2,110

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor SO <sub>2</sub> secondary emissions, lb/yr							Total BTF secondary emissions, lb/yr	Total MACT floor and BTF secondary emissions, lb/yr
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF SO <sub>2</sub> secondary emissions	MACT floor and BTF SO <sub>2</sub> secondary emissions		
55	55	St. Joseph's Hospital				0	0.4		0.4	36	1.1	798
59	59--1	Stericycle, Inc.	Unit 1				0.4	2.3	2.7	68	708	1,583
59	59--2	Stericycle, Inc.	Unit 2				0.4	2.3	2.7	68	708	1,583
60	60--1	BMWNC, Inc.	Unit 1		63		0.4	2.3	66	102	876	1,672
65	65--1	Stericycle, Inc.	Unit 1				0.4	2.3	2.7	68	708	1,583
65	65--2	Stericycle, Inc.	Unit 2			0	0.4		0.4	66	1.1	876
71	71	Loyola University Medical Center		34			0.4	2.3	36	102	798	1,672
77	77	Parkview Hospital		34		0	0.4		34	99	91	965
84	84	Mayo Clinic, Waste Management Facility							0	34	0	91
87	87	MedCentral Health System, Mansfield Hospital					0.4	2.3	2.7	39	708	1,504
94	94	Stericycle, Inc.					0.4	2.3	2.7	68	708	1,583
98	98--1	University of Texas Medical Branch					0.4		0.4	63	1.1	169
106	106	Stericycle, Inc.					0.4	2.3	2.7	68	708	1,583
109	109	Healthcare Environmental Services Inc.						2.3	2.3	39	707	1,504
110	110	Stericycle, Inc.						2.3	2.3	68	707	1,583
120	120--1	Municipality of Chambers County, Resource Recovery Center	Unit 1				0.4	2.3	2.7	39	708	1,504
120	120--2	Municipality of Chambers County, Resource Recovery Center	Unit 2				0.4		0.4	34	1.1	91
125	125	East Carolina University, Health Sciences Campus, HSC Utility Plant					0.4	2.3	2.7	5.0	708	1,415

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor SO <sub>2</sub> secondary emissions, lb/yr							Total BTF secondary emissions, lb/yr	Total MACT floor and BTF secondary emissions, lb/yr
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF SO <sub>2</sub> secondary emissions	MACT floor and BTF SO <sub>2</sub> secondary emissions		
130	130	Department of Veterans Affairs Medical Center					0.4		0.4	63	1.1	169
13	13	University of Maryland at Baltimore, Environmental Health and Safety Facility					0.05		0.05	11	0.1	28
16	16	Johns Hopkins Medical Institute, Department of Health, Safety, and Environment					0.05	0.3	0.4	11	106	240
18	18	Franklin Square Hospital Center					0.05	0.3	0.4	16	106	254
21	21	Washington County Hospital					0.05	0.3	0.4	16	106	254
25	25	Holy Spirit Hospital					0.05		0.05	11	0.1	28
30	30	Riddle Memorial Hospital					0.05		0.05	11	0.1	28
34	34	Pennsylvania State University, Animal Diagnostic Lab Incinerator		5.0			0.05	0.3	5.4	16	120	148
38	38	Wilkes-Barre General Hospital					0.05	0.3	0.4	5.4	106	120
41	41	Thomas Memorial Hospital					0.05		0.05	11	0.1	28
47	47	Malcolm Randall Veterans Affairs Medical Center					0.05	0.3	0.4	16	106	254
63	63	St. Jude Children's Research Hospital					0.05		0.05	5.1	0.1	14
81	81	South Bend Medical Foundation					0.05	0.3	0.4	16	106	148
82	82	Good Samaritan Hospital					0.05		0.05	11	0.1	28
88	88	Medina General Hospital					0.05	0.3	0.4	11	106	240
95	95	St. Joseph's Hospital					0.05	0.3	0.4	5.4	106	120
108	108--1	Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases	Unit 1		0		0.05	0.3	0.4	11	106	134
111	111	Wyoming Medical Center					0.05	0.3	0.4	11	106	240
86	86	Fairfield Medical Center			13		0.02	0.3	13	13	140	140
129	129	Centers for Disease Control and Prevention--Clifton, Building 18	Unit 3		13		0.02	0.3	13	13	140	246
115	115	Kona Community Hospital		1.4	3.7		0.009		5.1	5.1	14	14

**Table 13. Nationwide Beyond-the-Floor Secondary**

FACID	UNITID	Facility name	Unit number	Beyond-the-floor SO <sub>2</sub> secondary emissions, lb/yr						Total BTF secondary emissions, lb/yr	Total MACT floor and BTF secondary emissions, lb/yr	
				Packed-bed scrubber	DIFF	Secondary chamber retrofit	SNCR	Increase natural gas	Total BTF SO <sub>2</sub> secondary emissions			MACT floor and BTF SO <sub>2</sub> secondary emissions
116	116	Yukon-Kuskokwim Delta Regional Hospital		1.4			0.009		1.4	5.1	3.9	14
<b>Total nationwide</b>				142	533	0	14	43	732	2,609	15,231	36,212