and whether this level accurately reflects uncontrolled emissions of SO₂ at MWI's

f. MACT for Nitrogen Oxides. Typical uncontrolled emissions of NO_x are 140 ppmv but range as high as 210 ppmv. The MACT floor for NO_X is 216 ppmv and requires no control of NO_X. As discussed earlier, NOx control has not been demonstrated on MWI's. Therefore, MACT is also based on no control. However, because the Act requires the EPA to set a numerical emission limit for NO_X, the NO_X limit is proposed to be 210 ppmv, the highest uncontrolled NOx level measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 210 ppmv set for NO_X and whether this level accurately reflects uncontrolled emissions of NOx at MWI's.

4. MACT for Existing Batch MWI's

As discussed in section VI. the discussion that follows is based on limited test data on wet scrubber systems. The EPA requests comment on the performance and costs of wet scrubber systems. Also, while the paragraphs that follow focus on specific control technologies in determining MACT for existing batch MWI's, the guidelines do not require the use of any specific technology. The Agency's assessment of the performance of specific technologies is used to develop emission limitations, which appear in the guidelines. Any control technology that can comply with the emission limitations may be used.

a. MACT for PM, Pb, and Cd. Typical uncontrolled PM emissions from batch MWI's are about 570 mg/dscm. The MACT floor for PM emissions from batch MWI's is 69 mg/dscm. A fabric filter system is necessary to meet the MACT floor level. In fact, the FF system can reduce PM emissions even further, to 30 mg/dscm, at no additional cost.

Uncontrolled emissions of Pb and Cd from batch MWI's are about 4.2 mg/ dscm and 0.29 mg/dscm, respectively. The MACT floor emission levels for Pb and Cd are 23.10 mg/dscm and 3.44 mg/ dscm, respectively. Although no control is necessary to achieve the MACT floor levels for Pb and Cd, the FF system necessary to meet the MACT floor level for PM would also reduce emissions of Pb and Cd to 0.10 mg/dscm and 0.05 mg/dscm, respectively. Because this system is already necessary to meet the MACT floor level for PM, there is no cost associated with reducing emissions of Pb and Cd from the uncontrolled MACT floor levels to the level of control achieved by the FF system. Further reduction of Pb and Cd has not been

demonstrated. Therefore, the proposed MACT for batch MWI's is the level of control achievable with the FF system: 30 mg/dscm for PM, 0.10 mg/dscm for Pb, and 0.05 mg/dscm for Cd.

 b. MACT for Carbon Monoxide. Typical uncontrolled emissions of CO at batch MWI's are about 690 ppmv. The MACT floor is 91 ppmv. Two-second combustion control is necessary to meet the MACT floor level and is capable of achieving CO levels as low as 50 ppmv at no additional cost. Further reduction of CO emissions has not been demonstrated. Therefore, the proposed MACT for CO is 50 ppmv, the level achievable with 2-sec combustion.

c. MACT for Dioxins and Furans. Uncontrolled levels of dioxins and furans (CDD/CDF) are typically about 25,000 ng/dscm. The MACT floor for CDD/CDF is 14,606 ng/dscm. Onesecond combustion control is necessary to achieve the MACT floor emission level and is capable of reducing CDD/ CDF emissions to 7,000 ng/dscm. However, 2-second combustion control is already needed to achieve the MACT floor emission level for CO and would reduce CDD/CDF emissions even further, to about 1,500 ng/dscm, at no additional cost.

The level of control associated with the FF system is already needed to meet the MACT floor for PM. Further reduction in CDD/CDF emissions beyond the level of emissions achievable with 2-sec combustion control can be attained either by adding a wet system or by injecting carbon into the FF system. Although the wet system is capable of reducing CDD/CDF emissions, the less expensive approach would be to inject carbon into the FF system that is already needed to meet the MACT floor level for PM. An FF system with carbon injection can reduce CDD/CDF emissions to about 80 ng/ dscm and can substantially reduce Hg emissions. The nationwide incremental annual cost of carbon injection is about \$1.5 million/yr, or about \$170/ton of waste burned in batch MWI's. This incremental cost represents an increase of only about 2.7 percent over the cost of the FF system without carbon injection. As a result, MACT for CDD/ CDF is the level of control achievable with an FF system with carbon injection, 80 ng/dscm, or 1.9 ng/dscm

d. MACT for Mercury. Typical uncontrolled Hg emissions are about 3.1 mg/dscm. The MACT floor for Hg is 18.54 mg/dscm, and can be achieved at uncontrolled levels. The only control system capable of consistently reducing Hg emissions is the FF system with carbon injection, which can achieve

emissions of 0.47 mg/dscm Hg or 85 percent reduction from uncontrolled emissions. The FF system without carbon injection is necessary to meet the MACT floor emission level for PM and the injection of carbon is necessary to meet the proposed MACT emission level for CDD/CDF. As mentioned above in the discussion on CDD/CDF, the nationwide incremental annual cost of injecting carbon is about \$1.5 million/ yr, or about \$170/ton of waste burned. This additional cost represents an increase of only about 2.7 percent over the cost of the FF system without carbon injection. Therefore, the proposed MACT for Hg is 0.47 mg/dscm or 85 percent reduction.

e. MACT for Acid Gases (HCl and

SO₂). Uncontrolled levels of HCl and SO₂ from MWI's are 1,400 ppmv and 16 ppmv, respectively. As discussed earlier, acid gases controls are not effective in reducing emissions of SO₂ from MWI's. The MACT floor for HCl is 911 ppmv and requires a reduction of 35 percent from uncontrolled levels. Wet systems and FF systems are each capable of reducing HCl emissions to 42 ppmv or by 97 percent from uncontrolled levels. The FF system is already needed to meet the MACT floor emission levels for PM. The costs associated with reducing emissions of HCl from the MACT floor level (35 percent reduction) to the level of control achievable with the FF system (97 percent reduction) include costs for additional lime and ash disposal costs. These additional costs are negligible compared to the total cost of the system. Therefore, the proposed MACT for HCl is 42 ppmv or 97 percent reduction.

The MACT floor for SO₂ is 1,166 ppmv and can be achieved at uncontrolled emission levels. As discussed earlier, no controls have been demonstrated to consistently reduce SO₂ emissions from MWI's. Therefore, the proposed MACT for SO₂ is also based on uncontrolled emissions. Analyses of test data from MWI's show that typical uncontrolled emissions of SO₂ are about 16 ppmv, but can range as high as 45 ppmv. Because the Act requires the EPA to set numerical emission limit for SO₂, MACT for SO₂ is set at 45 ppmv, the highest SO₂ emission rate measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 45 ppmv set for SO₂ and whether this level accurately reflects uncontrolled emissions of SO₂ at MWI's.

f. MACT for Nitrogen Oxides. Typical uncontrolled emissions of NO_X are 140 ppmv but range as high as 210 ppmv. The MACT floor for NO_X is 220 ppmv and can be achieved at uncontrolled