

d. *Social Benefits.* Society will benefit from the proposed guidelines through the reduction of emissions of dioxins/furans, Cd, Pb, Hg, PM, HCl, SO₂, and NO_x. These pollutant categories are emitted by various types of sources, including MWC's. The level of pollutant emissions and health effects vary among types of sources, and total national emissions of these pollutants has been shown to have the health effects listed in table 11.

TABLE 11.—HEALTH AND OTHER EFFECTS

Pollutant category	Health and other effects
Organics	<ul style="list-style-type: none"> • Mortality, morbidity. • Carcinogenicity.
Metals	<ul style="list-style-type: none"> • Retardation and brain damage. • Hypertension. • Central nervous system injury.
Acid gases	<ul style="list-style-type: none"> • Renal dysfunction. • Materials damage. • Dental erosion. • Acid rain. • Mortality, morbidity. • Respiratory tract problems, permanent harm to lung. • Soiling and materials damage. • Reduced agricultural yield.
Particulate matter.	<ul style="list-style-type: none"> • Ozone formation. • Mortality, morbidity. • Eye and throat irritation, bronchitis, lung damage. • Impaired visibility. • Soiling and materials damage.

Because of limitations on data on the concentration-response function and valuation of these functions, benefits have not been quantified for all pollutants. Benefits have been quantified only for emissions of SO₂ and PM. Benefits have not been quantified for dioxins/furans, Cd, Pb, Hg, HCl or NO_x emission control. Benefits to the public and environment will result from the control of these hazardous air pollutants (HAP's) and criteria pollutants. For the HAP's, dioxin/furan

compounds have been associated with chloracne, reproductive/developmental effects, immune system toxicity, and cancer (probable human carcinogen). Particulate-associated metals including Pb and Cd are toxic and can cause effects such as mucous membrane irritation, gastrointestinal effects, nervous system disorders, skin irritation, and reproductive and developmental disorders. In regard to volatile metals, Hg in all forms may be characterized as quite toxic with each form exhibiting different health effects, including gastrointestinal and respiratory tract disturbances, central nervous system effects, and developmental effects. Additionally, HCl is corrosive and effects the eyes, skin, and mucus membranes, and dermatitis has been reported from long-term exposure.

Table 12 provides the estimated social benefits associated with reductions in PM and SO₂ emissions from MWC's and their distribution across public and private MWC's. The estimated social benefit of reduced PM and SO₂ emissions is \$106 million with \$60.3 million being attributed to reductions at publicly-owned MWC facilities. These benefits would be experienced annually by the residents of these municipalities. Proper allocation of these benefits would be based on the expected emission reductions at public and private MWC's. However, due to lack of data at the model plant level, these benefits are allocated across public and private MWC's in the same proportion as the estimated national compliance costs (i.e., 56.7 percent for public and 43.3 percent for private).

TABLE 12.—SOCIAL BENEFIT ESTIMATES FOR SO₂ and PM Emission Reductions by Ownership (\$1990)

Ownership category	Social benefits (\$10 ³ per year) ^{a b}		
	PM	SO ₂	Total
Public	30,779	29,475	60,254
Private ...	23,521	22,525	46,046

TABLE 12.—SOCIAL BENEFIT ESTIMATES FOR SO₂ and PM Emission Reductions by Ownership (\$1990)—Continued

Ownership category	Social benefits (\$10 ³ per year) ^{a b}		
	PM	SO ₂	Total
Total	54,300	52,000	106,300

^aBenefit estimates are \$1,200 per Mg of SO₂ reduced and \$17,700 per Mg of PM reduced. (This estimate is derived valuing all mortalities at \$4.4 million per life saved. This approach does not consider the length of the changes in longevity resulting from PM exposure). Social benefits attributable to public and private MWC's are proportionate to their share of the total annual costs.

^bDoes not include benefit credits for dioxins/furans, Cd, and Hg control.

Table 13 presents a comparison of the estimated social costs and benefits of the guidelines. Unfortunately, because benefit estimates are not computed for all pollutants, the social benefit provided in table 13 is a partial estimate. Because of this fact, the net benefits (i.e., benefits minus costs) shown in table 13 cannot be used to reach conclusions regarding the total net benefits of the rule for existing sources.

TABLE 13.—SOCIAL COSTS AND PARTIAL SOCIAL BENEFITS FROM REDUCING EMISSIONS AT MWC'S BY OWNERSHIP (\$1990, 10³ PER YEAR)

Ownership category	Total social costs	Partial social benefits
Public	251,107	60,254
Private	191,893	46,046
Total	443,000	106,300

3. Effects on the National Economy

The Unfunded Mandates Act requires that the EPA estimate "the effect" of this rule

"on the national economy, such as the effect on productivity, economic growth, full employment, creation of productive jobs, and international competitiveness of the U.S. goods and services, if and to the extent that the EPA in its sole discretion determines that