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Part II

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40 CFR Part 63
National Emission Standards for Hazardous Air Pollutants; Compliance Extensions for Early Reductions; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[AD–FRL–4534–3]

National Emission Standards for Hazardous Air Pollutants; Compliance Extensions for Early Reductions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Regulations governing compliance extensions for early reductions of hazardous air pollutants (HAP's) were proposed in the **Federal Register** on June 13, 1991. This action promulgates these regulations and implements the provisions of section 112(i)(5) of the Clean Air Act (CAA) (as amended in 1990). This rule establishes requirements and procedures for source owners or operators to obtain compliance extensions from section 112(d) standards and for reviewing agencies to follow in evaluating requests for extensions.

DATES: *Effective Date.* December 2[illegible] 1992.

Judicial Review. Under section 307(b)(1) of the CAA, judicial review of the actions taken by this notice is available only by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under section 307(b)(2) of the CAA, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: *Background Information Document.* The background information document (BID) for the promulgated standards may be obtained from the U.S. EPA Library (MD–35) Research Triangle Park, North Carolina 27711, telephone number (919) 541–[illegible]77. Please refer to "National Emission Standards for Hazardous Air Pollutants: Compliance Extensions for Early Reductions—Background Information for Promulgated Standards" (EPA–450/3–92–006b). The BID contains (1) a summary of all the public comments made on the proposed standards and EPA's responses to the comments; and (2) a summary of the changes made to the standard since proposal. Also available from the EPA Library are three additional supporting documents. These documents are:

(a) "Enabling Document for Regulations Governing Compliance Extensions for Early Reductions of Hazardous Air Pollutants" (EPA–450/[illegible] 91–013, July 1991);

(b) "Questions and Answers about the Early Reductions Program" (EPA–45[illegible] 3–92–005, January 1992); and

(c) "Procedures for Establishing Emissions for Early Reduction Compliance Extensions" (EPA–450/[illegible] 91–012a, February 1992).

Docket. Docket No. A–90–47, containing supporting information used in developing the promulgated standards, is available for public inspection and copying between 8:30 a.m. and 3:30 p.m., Monday through Friday, at EPA's Air Docket Section, Waterside Mall, room M–1500, 1st Floor, 401 M Street SW., Washington, DC 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: For information concerning the Early Reductions Program regulations, contact Mr. David Beck, telephone (919) 541–5421, or Mr. Richard Colyer, telephone (919) 541–5262. The address for both is Emission Standards Division (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711. For information concerning Method 301, contact Mr. Tony Wayne, telephone (919) 541–[illegible]76, Emission Measurement Branch, Technical Support Division (MD–19), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION: The information presented in this preamble is organized as follows:

I. General Requirements

Today's rule applies to any existing source that seeks a 6-year compliance extension from an applicable section 112(d) standard by achieving early emission reductions of HAP's. The compliance extension would be obtained and authorized in accordance with section 112(i)(5) of the CAA.

Section 112(i)(5) allows an existing source to be granted a 6-year extension of compliance with otherwise applicable section 112(d) standards upon demonstration by the owner or operator of the source that a 90 percent reduction in HAP's (95 percent or more in the case of particulates) has been achieved. An enforceable alternative emission limitation reflecting the reduction will be established for the source by a permit issued under Title V of the CAA.

The 90 (95) percent emission reduction must be achieved before proposal of an applicable section 112(d) standard in most cases. However, a source achieving the reduction after proposal of a standard but before January 1, 1994, may qualify for a compliance extension from section 112(d) standards by making an enforceable commitment before proposal of the standard to achieve such a reduction.

State or local air pollution control agencies with Title V permitting authority will review Title V operating permit applications for compliance extensions. They will issue permits containing alternative emission limitations applicable to sources achieving early reductions in lieu of section 112(d) standards in accordance with approved permit programs under Title V of the CAA. The EPA Regional Offices will review permit applications and issue Title V permits for sources located in States that do not have approved Title V permit programs. States will assume the review and permitting activities upon approval of their Title V permit programs, or may be granted delegation of the Early Reductions Program prior to approval of their Title V permit program.

II. Summary of Changes and Impacts of the Final Rule

Based on comments received during the comment period on the proposed rule, few significant changes have been made to the regulation. The significant changes are listed below.

The most significant change to the rule has been to the high-risk list of pollutants. Seventeen pollutants have been added to the list and five pollutants have been deleted. Weighting factors for seven pollutants have been adjusted. A provision was added to ensure that there are no increases in radionuclides as a result of the emission reduction demonstration. Another

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F. High-Risk Pollutants

1. Summary

Section 112(i)(5)(E) specifies that with respect to pollutants for which high risks of adverse public health effects may be associated with exposure to small quantities, the Administrator shall limit the use of offsetting reductions in emissions of other HAP's from the source as counting towards the 90 (95) percent reduction in such high-risk pollutants. In the final rule, the number of pollutants on the high-risk list is 47, rather than 35 as proposed. The additional pollutants are listed in Table 1.

TABLE 1. LIST OF POLLUTANTS ADDED TO HIGH-RISK LIST

CAS No.	Chemical	Weighting factor
53963	2-Acetylaminofluorene	100
532274	2-Chloroacetophenone	100
334883	Diazomethane	10
96128	1,2-Dibromo-3-chloropropane	10
79447	Dimethylcarbamoyl chloride	100
122667	1,2-Diphenylhydrazine	10
151564	Ethylene imine (Aziridine)	100
77474	Hexachlorocyclopentadiene	10
0	Manganese compounds	10
60344	Methyl hydrazine	10
0	Nickel compounds	10
684935	N-Nitroso-N-methylurea	1000
62759	N-Nitrosodimethylamine	100
56382	Parathion	10
7803512	Phosphine	10
7723140	Phosphorus	10
8001352	Toxaphene	100

These pollutants have been added to the list since proposal for a number of reasons including changes to the methodology EPA used to select the pollutants and updated health effects information. Five pollutants which were proposed for the high-risk list have been deleted. These are benzotrichloride; chloroprene; 1,1,2,2-tetrachloroethane; 2,4-toluene diisocyanate; and vinylidene chloride. The final list of high-risk pollutants and their weighting factors are shown in Table 2.

TABLE 2. LIST OF HIGH-RISK POLLUTANTS

CAS No.	Chemical	Weighting factor
53963	2-Acetylaminofluorene	100
107028	Acrolein	100
79061	Acrylamide	10
79107	Acrylic acid	10
107131	Acrylonitrile	10
0	Arsenic compounds	100
1332214	Asbestos	100
71432	Benzene	10
92875	Benzidine	1000
0	Beryllium compounds	10
542881	Bis(chloromethyl) ether	1000
106990	1,3-Butadiene	10
0	Cadmium compounds	10
57749	Chlordane	100
532274	2-Chloroacetophenone	100
0	Chromium compounds	100
107302	Chloromethyl methyl ether.	10
0	Coke oven emissions	10
334883	Diazomethane	10
132649	Dibenzofuran	10
96128	1,2-Dibromo-3-chloropropane.	10
111444	Dichloroethyl ether (Bis(2-chloroethyl)ether).	10
79447	Dimethylcarbamoyl chloride.	100

TABLE 2. LIST OF HIGH-RISK POLLUTANTS—Continued

CAS No.	Chemical	Weighting factor
122667	1,2-Diphenylhydrazine	10
106934	Ethylene dibromide	10
151564	Ethylenimine (Aziridine)	100
75218	Ethylene oxide	10
76448	Heptachlor	100
118741	Hexachlorobenzene	100
77474	Hexachlorocyclopentadiene.	10
302012	Hydrazine	100
0	Manganese compounds	10
0	Mercury compounds	100
101688	Methylene diphenyl diisocyanate (MDI).	10
60344	Methyl hydrazine	10
624839	Methyl isocyanate	10
0	Nickel compounds	10
62759	N-Nitrosodimethylamine	100
684935	N-Nitroso-N-methylurea	1000
56382	Parathion	10
75445	Phosgene	10
7803512	Phosphine	10
7723140	Phosphorus	10
75558	1,2-Propylenimine	100
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin.	100,000
8001352	Toxaphene (chlorinated camphene).	100
75014	Vinyl chloride	10

The specific changes made to the methodology and the rationale for specific pollutants being added to or deleted from the list are described below.

2. Methodology for Selecting Pollutants for the High-Risk List

The methodology used to formulate the list of high-risk pollutants, the list itself, and the weighted offsetting scheme are a direct response to the mandate in section 112(i)(5)(E) of the Act. The high-risk list and the weighted offsetting scheme may not be applicable to, or appropriate for, other sections in Title III of the Act. Other provisions of section 112, such as establishing lesser quantity emission rates under section 112(a) and identifying the relative hazards to human health from emissions of each of the listed hazardous air pollutants under 112(g) may also require the ranking of pollutants. The approach for identifying the high-risk pollutants may or may not be found to be appropriate for these or other provisions. The selection of today's approach for the purposes of section 112(i)(5)(E) is not intended to establish a precedent for other provisions or preclude the consideration of other alternative methodologies.

As presented in the preamble to the proposed rule, EPA used a number of criteria for selecting pollutants for the high-risk list. First, as specified by the CAA, chlorinated dioxins and furans (as listed in section 112(b)) were included on the high-risk list. Second, pollutants classified by EPA as Group A carcinogens (known human carcinogens) were judged to be of sufficient concern to be listed as high-risk. Third, as a way to systematically screen the remaining HAP's listed in section 112(b), EPA employed a three-tiered screening analysis for selecting high-risk pollutants.

In the first tier, health effects data were examined to rank pollutants based solely on health effects. The health

endpoints considered were carcinogenicity, reproductive and developmental toxicity, acute lethality, and systemic effects other than acute lethality (e.g., neurologic disorders). Consideration of health effects alone, however, was judged insufficient to address section 112(i)(5)(E) which describes high-risk pollutants as those for which high risks of adverse public health effects may be associated with exposure to small quantities. Accordingly, tier 2 of the analysis was exposure modeling using EPA's Human Exposure Model (HEM). The HEM provided an estimate of the ambient concentration 500 meters from a source emitting 10 tons per year at an average height of 10 meters under median meteorological conditions. As described in the preamble to the proposed rule, the ambient concentration predicted by the HEM was compared to selected risk levels to screen for pollutants likely to have an adverse effect at the exposure level that was modeled. For carcinogens, the modeled ambient concentration was compared to the concentration of each carcinogen that would result in an increase in cancer risk of one in ten thousand to the most exposed individual. For noncarcinogens, the modeled ambient concentration was compared to either (1) a level one order of magnitude greater than a verified inhalation reference concentration or oral reference dose, (2) a lowest observed effect level (LOEL) divided by an uncertainty factor of 100, or (3) the dose or concentration of a chemical that causes death in 50 percent of the exposed population (LD_{50} or LC_{50}) divided by an uncertainty factor of 1000.

Tier 3, which considered actual pollutant emissions as reported to the TRI, was intended to determine whether the pollutants were actually emitted at levels that could reasonably be expected to adversely affect public health. Pollutants with a low exposure potential were consequently eliminated from the high-risk list.

Several commenters stated that it was inappropriate to eliminate pollutants from the high-risk list based on emissions data. The commenters contended that use of the TRI is inappropriate because not all pollutants are reported, only large facilities in the manufacturing sector report to the inventory, and not all types of source categories are covered. The commenters felt that EPA should not eliminate substances because they are not currently in common use and that the tier 3 screen should be dropped from the analysis.

The EPA agrees with the commenters' concerns regarding use of the TRI and has consequently dropped tier 3 from the analysis. The EPA also agrees that chemicals not currently in common use should still be listed as high risk in case production of that chemical is resumed at a later date. The EPA now believes that tiers 1 and 2 adequately identify those pollutants that could reasonably be expected to adversely affect public health and thus limited the offsetting of these pollutants in the Early Reductions Program. The impact of dropping tier 3 is that the following pollutants have been added to the high-risk list: 2-acetylaminofluorene; 1,2 diphenyl hydrazine; toxaphene; nickel compounds; N-nitrosodimethylamine; ethylene imine (aziridine); dimethylcarbamoyl chloride; phosphorus and diazomethane.

Many commenters recommended changes to the parameters chosen for the tier 2 exposure analysis. Several commenters felt that the exposure assumptions were not conservative for several reasons including the meteorological data, the stack parameters, and the limitations of the HEM. One commenter stated that one year of meteorological data is not representative and that downwash was not considered. Two commenters suggested a shorter stack height of 3.5 meters and a 20 meter distance to the nearest residence. Another commenter recommended that the modeling use more realistic assumptions about the pollutants and emission sources. One commenter contended that the HEM is too simplistic because it does not consider actual exposure, short-term exposures or population activity patterns. Other commenters made suggestions which would make the analysis less conservative. Two commenters felt that the 500 meter distance to the nearest residence was too close. One of these commenters suggested a distance of 3000 meters and a 10 year population residence time (rather than the 70 year lifetime exposure associated with the cancer potency factor).

The second tier of the screening analysis to select the high-risk pollutants was a generic exposure modeling exercise. The EPA intended that the modeling results be used to determine which pollutants merited further analysis based on exposure potential. The EPA did not use the modeling results to estimate actual risk levels, but did use the modeling results to differentiate between pollutants. The EPA still considers the use of generic modeling parameters appropriate for this analysis because a wide range of emission release and exposure scenarios across many varied source categories are anticipated under the Early Reductions Program.

The HEM was used to estimate a theoretical downwind concentration of a typical HAP. Because the pollutants are released from various types of sources with variable stack parameters (stack height, emission velocity, distance to nearest residence, etc.) there was no attempt made to model site-specific conditions. Meteorological data used were representative of between 2 and 10 years of data from the selected meteorological station. A 10 meter stack height was chosen to represent a chemical plant. For the proposed rule, the modeling parameters also assumed a 70-year continuous exposure and a 500 meter distance to the nearest residence. Upon re-evaluation, EPA has made changes to these two parameters.

First, the assumption that exposure to a pollutant occurs continuously over a 70-year period has been changed to 33 years for the purposes of this rulemaking. Thirty-three years is a duration representative of the 95th percentile for the number of years an individual would remain at the same residence, based on data on population mobility and mortality. The 33-year duration was selected for use in this analysis as representative of a reasonable worst case approach to assessing exposure duration. Second, EPA reconsidered the choice of 500 meters to the nearest residence and has revised the analysis using a 200 meter distance. The 200 meter distance to the nearest residence is the distance that has been most often used by EPA for analyses estimating exposure to emissions from point sources. This distance represents a reasonable worst case for point source and is judged to represent a reasonable worst case for facilities that are anticipated to participate in the Early Reductions Program. The net impact of these changes was the addition of hexachlorocyclopentadiene, phosphine, parathion, and manganese compounds to the list.

Four commenters disagreed with the one in ten thousand presumptive risk benchmark for carcinogens, stating that it was not conservative enough. One commenter recommended that EPA include every carcinogen with a potency factor greater than 1.35×10^{-6} $(\mu g/m^3)^{-1}$ based on modeling a 3.5 meter stack. Another commenter argued that Congress intended that sources with risk levels of one in one million be controlled. In contrast, one commenter recommended the benchmark be lowered to one in one thousand. This

commenter believes that the one in ten thousand risk benchmark is inconsistent with the "Savings Provision" in section 112(q)(1), where standards promulgated under section 112 in effect prior to the 1990 amendments are to remain in force unless revised by EPA.

The exposure modeling exercise conducted as part of tier 2 of the screening analysis was used as a tool to identify pollutants that could potentially cause a high risk to public health (under the exposure scenario that was modeled). The EPA has decided that for carcinogens a one in ten thousand presumptive risk level is appropriate for this analysis. This decision is based primarily on guidance concerning acceptable risk discussed in the benzene NESHAP promulgated on September 14, 1989 (54 FR 38044). In the preamble to the benzene decision, the use of the one in ten thousand benchmark is described—"EPA will consider the extent of the estimated risk were an individual exposed to the maximum level of pollutant for a lifetime. The EPA will generally presume that if the risk to that individual is no higher than approximately one in ten thousand, that risk level is considered acceptable and EPA then considers the other health and risk factors to complete an overall judgment on acceptability. The presumptive level provides a benchmark for judging the acceptability of maximum individual risk, but does not constitute a rigid line for making that determination." In the case of the screening analysis for high-risk pollutants under the Early Reductions provisions, EPA believes the one in ten thousand presumptive risk level has been used appropriately. The commenters are reminded that the generic exposure analysis was not meant to estimate the actual risk from any one type of source category, but rather was used to differentiate between pollutants based on relative toxicities.

The EPA recognizes that other modeling assumptions could have been used that would have resulted in either more or fewer pollutants exceeding the presumptive risk level. However, EPA does not agree with the commenter's suggestion that every carcinogen with a potency factor greater than 1.35×10^{-6} $(\mu g/m^3)^{-1}$ should be considered high risk.

With respect to the comment that Congress intended that sources posing risks of one in one million be controlled, the commenter is referring to section 112(f)(A), the so-called "residual risk" provisions. In this provision it is stipulated that additional emission standards must be promulgated if a source's emissions pose a risk greater than one in one million after application of control technology (as stipulated in section 112(d)). The commenter is reminded that the Early Reductions Program provides an extension of the compliance time for applying control technology that is stipulated by standards promulgated under section 112(d). After the compliance time extension, facilities participating in the Early Reductions Program must still apply the required technology if their emissions exceed specified levels. In addition, facilities that participate in the Early Reductions Program are not exempted from a residual risk test under section 112(f), so the commenter's concern that the intent of Congress is not being fulfilled is unwarranted.

With respect to the Savings Provision of section 112(q)(1) the commenter is reminded that today's rule is not an emission standard, but procedures for obtaining an Early Reductions compliance extension. The use of the presumptive risk benchmark of one in ten thousand in the screening analysis for selecting high-risk pollutants has no bearing on NESHAP that have already been promulgated.

Two commenters questioned the benchmarks chosen for health effects other than cancer. These commenters felt that neither the LOEL divided by a safety factor of 100 nor the LD_{50} divided by a safety factor of 1000 were conservative enough. The commenters also thought that using a value one order of magnitude above the reference concentration was not conservative enough.

As stated in the preamble to the proposed rule, uncertainty factors were applied to the health effects benchmarks since the LOEL and LD_{50} values represent levels at which health effects are known to occur. These uncertainty factors were meant to account for variables such as interspecies variations and sensitive subpopulations, but do not incorporate all the factors typically used in developing reference concentrations. The uncertainty factors used to develop an inhalation reference concentration are typically applied to a lowest observed adverse effect level (LOAEL) or no observed adverse effects level (NOAEL). The resulting reference concentration represents a level at which the potential for adverse public health effects is considered to be negligible. However, the purpose of this analysis was to identify pollutants whose emissions could potentially present a high risk, not a de minimis risk. Therefore, the uncertainty factors used in this analysis were not meant to account for all the factors typically used in developing an inhalation reference concentration. For this analysis, EPA made a judgment that if a source's emissions were such that a LOEL or LD_{50} could potentially be exceeded (after application of the uncertainty factors and under the modeling scenario used) then the pollutant could be considered high risk. In this application, EPA believes uncertainty factors of 100 and 1000 to be appropriate. Similarly, with respect to using a value one order of magnitude above the reference concentration, EPA believes this to be an appropriate estimate of a level at which health effects could potentially be significant enough to be regarded as high risk.

Two commenters strongly urged EPA to confine the selection of carcinogens for the high-risk list to consideration of carcinogenic potency and not make use of the weight-of-evidence classification. Three commenters objected to the addition of four Group A carcinogens to the list after the pollutants had been excluded by the 3-tiered process. On the other hand, two other commenters recommended that EPA prioritize the high-risk list using a qualitative rather than quantitative approach (i.e., use weight-of-evidence reviews for identifying substances rather than potency factors).

The EPA believes it appropriate for identification of high-risk pollutants to consider both the weight of evidence and carcinogenic potency of a pollutant. The EPA stands by the decision to list Group A carcinogens as high risk based on the fact that these are known human carcinogens. The EPA judged that emissions of known human carcinogens are of sufficient concern that use of offsetting reductions in other less hazardous pollutants under an Early Reduction demonstration should be limited. Three of the pollutants (benzidine, bis(chloromethyl)ether, and chloromethyl methyl ether) are extremely potent carcinogens and were excluded from the 3-tiered process at tier 3. This means that, according to the 1989 TRI, these pollutants were not emitted by any reporting facility in quantities sufficient to exceed the risk benchmark level proposed by EPA. In spite of this, EPA felt it prudent to list them as high risk in case a source's emissions changed in the future. As discussed above, since proposal of the high-risk list, EPA has decided to eliminate tier 3 from the screening analysis. As a result, even if EPA had decided not to use weight of evidence as a criterion, these carcinogens would still be listed as high-risk pollutants. Benzene was also included on the list even though the risk benchmark level

was not exceeded when a 10 tons per year emission rate was modeled. The rationale for this decision was that in addition to being a known human carcinogen, benzene is a very high volume chemical and emissions in excess of 10 tons per year are not uncommon. The EPA believes that offsetting emissions of this known human carcinogen with less hazardous pollutants should also be limited.

Two commenters suggested that EPA revise the selection criteria to include only known human carcinogens (Group A), probable human carcinogens (Group B1), and noncarcinogens for which chronic human health effects can be expected to occur at extremely low levels of exposure.

In selecting pollutants for the high-risk list, EPA considered weight-of-evidence, potency and exposure potential of the pollutant. As described above, a weight-of-evidence classification of Group A (known human carcinogen) was deemed sufficient to list a pollutant as high-risk. The EPA does not agree with the commenters suggestion that Group B2 and Group C carcinogens should not be considered for or included on the high-risk list. In order to be listed, however, carcinogens other than Group A had to pass tier 2 of the analysis which considered potency and exposure potential.

The EPA also disagrees with the commenters suggestion that only chronic human health effects should be considered. Section 112(b) of the CAA describes HAP's as those pollutants which present, or may present, a threat of adverse human health effects including substances which are carcinogenic, mutagenic, teratogenic, neurotoxic, which cause reproductive dysfunction, or which are acutely or chronically toxic. Thus, EPA believed it appropriate to assess (and include on the high-risk list, where appropriate) pollutants that are acutely as well as chronically toxic.

3. Weighted Index for High-Risk Pollutants

In the proposed rule, EPA described an indexed offsetting system based on the toxicity of the high-risk pollutants relative to each other.

Several commenters believe that the weighted index system conflicts with the CAA because it allows offsetting of high-risk pollutants with non-high risk pollutants. The commenters state that high-risk pollutants should not be allowed to be offset by non-high risk pollutants, or only be allowed when high-risk pollutants are emitted in trace amounts. Other commenters agreed with the weighting factor concept and the ability to offset high-risk pollutants.

In the final rule, a number of weighting factors have been adjusted as described below, but the weighting factor system as a whole is essentially unchanged. Contrary to several commenters contentions, the high-risk pollutant strategy does not conflict with section 112(i)(5)(E). That provision requires the Administrator to limit, by regulation, the use of offsetting reductions of other HAP's in counting towards the 90 (95) per cent reduction of high-risk pollutants. The statute does not say or even imply that the regulation must prohibit such offsetting reductions.

In response to the comment that these offsets should only be allowed when these pollutants are emitted in trace amounts, EPA notes that the weighting system effectively restricts the offsetting of emissions of the high-risk pollutants. Such a large reduction of a non-high risk pollutant is needed to offset a high-risk pollutant (up to 100,000 to 1) that only relatively trace amounts could be traded. Even in situations where the pollutant concentrations are relatively large (i.e., not trace amounts), it is appropriate to allow offsetting as long as the weighting factor system is followed. If one ton of a HAP with a weighting factor of 100 is offset with a 10 ton reduction in a pollutant with a weighting factor of 10, the offset generally should provide a similar degree of risk reduction. Consequently, EPA believes such offsets should not be prohibited. Note that these relative trades deal with decreases in the high-risk pollutants. It is not envisioned that any successful Early Reduction submittal will include any increase in high-risk pollutants other than incidental trace amounts.

Several commenters stated that trading among pollutants with different types of health effects is inappropriate. The commenters recommend using critical health effects and toxic potency information to place the listed pollutants into categories, with trading allowed within a category. Trading across categories would be allowed only for categories based on similar health effects. Weighting factors based on relative potencies would be used in such tradeoffs.

The development of the weighting system and the decision to allow trading between carcinogens and noncarcinogens is intended to provide flexibility to the participating facilities in achieving their emission reduction goals. As such, it is a policy decision and not one based purely on scientific grounds. If trading between pollutants with different health endpoints was restricted, this could potentially exclude some facilities from participating in the Early Reductions Program. The EPA feels that such restrictions would not benefit the goals of the Program as a whole.

Several comment letters made reference to the development of weighting factors for the high-risk pollutants. One commenter recommended the weighting factors be based on weight of evidence classification. On the other hand, three commenters recommended the weighting factors be based only on potency as described by the cancer potency factor. Another commenter further suggested that the cancer potency factor be multiplied by one million to arrive at the weighting factor. Finally, one commenter suggested a combination approach where both weight-of-evidence and potency would be considered. In this approach, pollutants with the same weight-of-evidence classification and having potency factors within an order of magnitude would be grouped together.

The weighting factor system has been revised slightly since the high-risk list was proposed. In the final rule, carcinogens, with a Group C classification (possible human carcinogens) have been assigned a lower weight. Greater uncertainty exists regarding the evidence for a Group C classification than that existing for chemicals classified as Group A (known human carcinogen) or B (probably carcinogenic to humans). A Group C classification is defined by positive carcinogenicity in a single experiment, a tumor response of marginal statistical significance, or finding benign tumors only. A Group B classification, whereas, is defined by carcinogenicity in two or more animal species, strains, or experiments, either with or without limited human evidence. Group A is reserved for known human carcinogens. The greater uncertainty regarding a Group C classification is reflected in a lower weighting factor. As a result, two Group C carcinogens (1,1,2,2-tetrachloroethane and vinylidene chloride) have been assigned weighting factors of 1 rather than 10 as proposed. The EPA does not feel, however, that chemicals classified in Group B should necessarily be weighted lower than those classified as Group A. With respect to Group B chemicals, a sound foundation exists regarding carcinogenicity in animals, but the human data are either inconclusive or of limited value, most likely reflecting the difficulty of obtaining quality epidemiologic data. For this weighting

system then, chemicals classified as Group A or B are combined and ranked by potency.

For carcinogens, the actual weighting factors are based on the potency of the high-risk carcinogens relative to carcinogens not on the high-risk list. This approach is the same as was proposed. Multiplying the potency factors by one million as one commenter suggested to calculate weighting factors would result in the same relative ranking of the pollutants, but higher weighting factors. The EPA believes that basing the weighting factors on the differences between the potency of the high-risk carcinogens and the geometric mean potency of the group of carcinogens not on the high-risk list is more justifiable.

Three commenters questioned EPA's policy decision concerning the weighting factors for noncarcinogens. The commenters believe that EPA must assess many additional factors when ranking the hazards of noncarcinogens. These factors include the severity of effect, its reversibility, and chemical properties such as the half-life of volatile compounds in air, vapor pressure, persistence, and bioaccumulation potential.

In assigning weighting factors to the high-risk pollutants, EPA attempted to base the factors on the relative toxicity of the compounds. For the carcinogens, the cancer potency factor is a straightforward measure of relative toxicity and was used in conjunction with the weight of evidence classification to develop the weighting factors. For the noncarcinogens, however, there is not a comparable measure of toxicity that can be used consistently for pollutants with different health effects. In the absence of such a measure, EPA proposed to assign a weighting factor of 10 to the noncarcinogens on the high-risk list. Many of the carcinogens were also assigned a weighting factor of 10. The EPA chose a weighting factor of 10 for the noncarcinongens in recognition that noncancer health effects can be as seriously debilitating as cancer. Another alternative would have been to assign these pollutants a weighting factor of 1 because other indices were not available. The EPA rejected this option because only by assigning a weighting factor greater than 1 is offsetting limited between these noncarcinogens and other pollutants not on the high-risk list. In the final rule, three noncarcinogens were assigned weighting factors greater than 10. The rationale for increasing the weighting factor from 10 to 100 for mercury is based on consideration of persistence in the environment and bioaccumulation, as discussed below. After a review of the scientific data, two other noncarcinogens (acrolein and 2-chloroacetophenone) have been assigned weighting factors of 100 rather than 10 in the final rule to provide an adequate margin of safety from adverse health effects. This decision is explained fully in a memorandum to the docket entitled "Need for Additional Weighting of Two Chemicals".

Four commenters believe EPA should establish more weighting factor categories to reflect more accurately the different toxicity levels of the various pollutants. On the other hand, two commenters believe more pollutants should be grouped together so that there is not such a wide range in weighting factors.

The EPA has reviewed the weighting factor categories and still finds four separate categories to be appropriate. As described in the comment above concerning weighting factors there were some adjustments made to the placement of certain pollutants. However, the general categories with weighting factors of 100,000; 1000; 100; and 10 are still believed to be appropriate. The difference between the most toxic carcinogen and the least toxic carcinogen with a weighting factor of 10 is about a factor of 35 (with the exception of one pollutant). Given the uncertainties inherent in the health data, EPA does not feel that this is enough of a difference to warrant another weighting factor category.

Another commenter suggested that the weighting factor could be customized for each facility by relating the weighting factor to the degree to which a reference concentration is exceeded. The commenter believed that this approach would emphasize reductions in cases where reference concentrations may be exceeded and assigns less weight to high-risk pollutants in cases where the reference concentrations are not likely to be exceeded.

There are several reasons why EPA prefers that weighting factors not be customized for each participating facility. The primary reason is that the weighting factors reflect the differences in the toxicity of the pollutants regardless of emission rates. For example, if facility X emits 50 tons of benzidine, a 1000 to 1 trade is necessary with a HAP not on the high-risk list. If facility Y emits 1 ton of benzidine, a 1000 to 1 offset is also required. The EPA believes this will emphasize reductions in the high-risk pollutants even if these emissions are small. In addition, participation in the Early Reductions Program is available to all facilities throughout the Nation. The EPA prefers that for consistency in program implementation the weighting factors for the high-risk pollutants not be customized for each participating facility. In addition, such customizing can greatly complicate the application preparation and review process; facilities and reviewing agencies may not have the expertise or resources to either perform or review site-specific modeling analyses and determine appropriate weighting factors.

Four commenters discussed pollutants that persist in the environment and/or bioaccumulate. These commenters recommended that any pollutants identified as persistent or bioaccumulative be added to the list. The commenters further suggested that an additional weighting factor of 10 be applied to these pollutants. After consideration of public comments, EPA has decided to adjust the weighting factors for chlordane, heptachlor, hexachlorobenzene, mercury compounds, and toxaphene from 10 to 100 based on persistence in the environment and bioaccumulation. The weighting factors for these particular pollutants were increased based on persistence and bioaccumulation data compiled for EPA in support of the CAA Great Waters Study.

4. Additions/Deletions to the High-Risk List

In addition to the changes to the high-risk list described above, EPA added four pollutants to the list and deleted three pollutants on the basis of health effects data. Methyl hydrazine, 2-chloroacetophenone, and 1,2-dibromo-3-chloropropane were added based on newly available or revised RfCs. N-nitroso-N-methlyurea was added because a unit risk estimate is available in a health assessment document. Benzotrichloride was deleted from the list because an inhalation potency factor was unavailable. Further review of the studies supporting the listing of chloroprene led to the determination that the primary study was not acceptable and, therefore, chloroprene was removed from the list. The RfC for 2,4-toluene diisocyanate is undergoing review based on new data and, therefore, 2,4-toluene diisocyanate was removed from the list.

Two commenters stated that when pollutants are added to the list, a source should not be exempt from further reducing those pollutants, but the source should be given up to three years to adjust its emissions to continue to qualify for the Early Reduction extension or else comply with the emissions standard under section

112(d). Other commenters believe the changes to the high-risk pollutant list should not affect the status of a previously submitted commitment or application.

The EPA has decided that sources with an approved enforceable commitment, or an approved permit specifying an alternative emission limit, will not be affected when a HAP is either added to the list in section 112(b), or is newly designated as a high-risk pollutant. The EPA expects to update the list of high-risk pollutants as the science requires. It is conceivable that a source would have to revise a post-reduction demonstration with each revision of the list. This requirement could add significantly to administrative burden for both the source and the reviewing agency. Given that the source will be in full compliance with the emission standards under section 112(d) at the end of the six year extension, EPA feels this additional administrative burden is unnecessary.

5. Comments on Specific High-Risk Pollutants

The EPA received one comment asking why lead was not listed as a high-risk pollutant.

Airborne lead emissions are currently regulated by a National Ambient Air Quality Standard (NAAQS). The EPA is currently reviewing the data the NAAQS is based on and expects to make a decision on revising the standard in the near future. Given this, and other policy considerations regarding identifying a criteria pollutant as high risk, at this time EPA believes it is appropriate to leave lead compounds off the high-risk list.

One commenter urged EPA to add radionuclides to the high-risk list.

The EPA did not add radionuclides to the high-risk list because radionuclide emissions are measured in terms of activity rather than mass and it would be extremely difficult to equate the two for the purpose of offsetting. The EPA recognizes however, that radionuclides could potentially be present in trace amounts from some combustion sources. To account for this, language has been added to the final rule that stipulates that if a radionuclide source is included in the emissions pool, EPA will not allow increases in radionuclide emissions under any post-reduction scenario.

Numerous commenters requested that specific pollutants be removed from the high-risk list. Most of the commenters took issue with the scientific basis of EPA potency factors or other specifics of the scientific studies that document the health effects. As stated above, three chemicals were deleted from the list because of health effects data and two were assigned weighting factors of one because of their Group C cancer classification. All other requests to delete pollutants from the list were denied. The rationale supporting the specific determinations are addressed in the BID.

G. State Authority

A number of commenters recommended that States be delegated authority for implementing the Early Reductions Program even before States are given permitting authority under title V of the CAA.

The EPA specifically solicited comment on whether this Program should be delegated to the States. Based on the comments received, EPA is proceeding to establish the criteria for delegating the Early Reductions Program to those States that seek delegation in advance of having a title V operating permit program. Section 112(l) of the CAA authorizes the Administrator to approve a State program for the implementation and enforcement of the emission standards and other requirements of the section, including partial delegation of the program. That is, EPA anticipates that it will, if a state so desires, delegate to a State the authority to develop and implement the Early Reductions Program. The EPA anticipates that it will publish delegation guidance in the near future that will be useful to the States in developing programs for submittal.

Of course, until such time as a State has an approved State program under title V, it cannot issue a title V permit. See CAA section 112(l)(9). Therefore, the Administrator cannot delegate his authority to issue a permit establishing an alternative emission limit under section 112(i)(5) until such time as the state has an approved title V permit program.

Various comments were received pertaining to a State's authority to impose stricter requirements for compliance extensions than those specified in the rule.

The CAA states in section 112(i)(5)(A) that "Nothing in this paragraph shall preclude a State from requiring reductions in excess of those specified in this subparagraph as a condition of granting the extension * * *. Although not specifically stated, it is implied that the excess reductions can only be required as a condition of the State granting the extension. The CAA, therefore, implies that when the State is the permitting authority, the State may require greater than 90 (95) percent reduction as a condition for granting the extension. As long as EPA (administered through the Region) remains the permitting authority, the CAA specifies 90 (95) percent reduction.

Finally, two commenters contended that States should have the option of not allowing facilities in their States to participate in the Program or developing alternative emission limits.

The Early Reductions Program is a national program mandated by Congress through the CAA and as such, States do not have the authority to disallow participation. However, States do have the power to impose additional or stricter State standards or require greater than 90 (95) percent reduction as a condition of granting an Early Reductions compliance extension under their title V State permitting program.

H. Interface With Title V Permits

One commenter was concerned that the Early Reductions rule required compliance extensions to be in the form of a title V permit. Since there is a chance that the regulations for operating permits will not be finalized until after the first set of section 112(d) standards are proposed, the commenter believed that it may be too late to apply for a compliance extension for all sources covered by the section 112(d) standards.

The regulation allows sources covered by standards proposed prior to January 1, 1994, to submit an enforceable commitment prior to proposal of the standard. The source is then allowed until January 1, 1994, to achieve the reductions and may submit a permit application as late as December 1, 1993. Sources which have already achieved the required reduction prior to proposal of an applicable section 112(d) standard must submit a permit application containing the reduction demonstration prior to such proposal; or if a Federal or State permitting program is not yet in place, the permit application for the Early Reductions source may be submitted up to 120 days after the permitting authority has established a permitting program under title V. In the latter situation, even though the permit application would have to be submitted after proposal, the source owner or operator must still document that the required early reductions were achieved prior to proposal of the applicable section 112(d) standard. In the event that such documentation cannot be provided, the source's Early Reductions demonstration would be disallowed and the source would have to meet the section 112(d) standard.

It has become apparent recently that no comprehensive title V permitting mechanism, either a federal rule for