ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 264 and 270

[SW-FRL-3018-5]

Hazardous Waste Management System; Ground-Water Monitoring

AGENCY: Environmental Protection Agency.

ACTION: Proposed Rule and Request for Comments.

SUMMARY: The Environmental Protection Agency is today proposing to amend its regulations concerning ground-water monitoring with regard to analyzing suspected contamination from regulated units at land-based hazardous waste treatment, storage, and disposal facilities. The amendments would replace current requirements to analyze for the general list of all constituents on Appendix VIII to Part 261 with new requirements to analyze for a specific ground-water monitoring list of chemicals (Appendix IX to Part 264), plus additional chemicals designated by the Regional Administrator on a site-specific basis.

DATES: Comments must be submitted on or before September 22, 1986.

ADDRESSES: Comments should be submitted to the RCRA Docket Section (WH-562), U.S. EPA, 401 M Street, SW., Washington, DC 20460 [Attention: Docket No. F-86-GWAP-FFFFF]. The public docket, including the background documents cited in this preamble, is located in Room S-212 and is available for viewing from 9:30 A.M. to 3:30 P.M., Monday through Friday, excluding legal holidays.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline, Office of Solid Waste (WH-562), U.S. EPA, 401 M Street, SW., Washington, DC 20460, (800) 424-9346 or (202) 382-3000.

For information on specific aspects of this proposed rule contact: Dr. Robert April, Office of Solid Waste (WH-565A), U.S. EPA, 401 M Street, SW., Washington, DC 20460, (202) 382-7917.

SUPPLEMENTARY INFORMATION:

I. Authority

These regulations are being proposed under the authority of Sections 2002(a), 3001, 3004, and 3006 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6912, 6921, 6925, and 6926.

II. Background

On May 19, 1980, the Environmental Protection Agency (EPA) promulgated comprehensive regulations implementing the Resource Conservation and Recovery Act (RCRA). A major issue concerning these regulations was how to identify "hazardous" waste. To assist in this identification process, EPA developed a list of chemicals ". . . that have been shown in reputable scientific studies to have toxic, carcinogenic, mutagenic, or teratogenic effects on humans or other life forms . . ." 45 FR 33107, (May 19, 1980). This list was published as Appendix VIII to Part 261 of the regulations.

The Appendix VIII list is actually a composite of several other lists. It includes chemicals such as those identified as priority pollutants under the Clean Water Act, chemicals identified by the Department of Transportation as hazardous to transport, chemicals for which EPA's Carcinogen Assessment Group (CAG) had laboratory evidence of carcinogenicity, and chemicals which the NIOSH Registry of Toxic Effects of Chemical Substances listed as having high acute toxicity (numerically low LD_{50}).

The principal purpose of the list was to define a universe of chemicals of concern. Wastes would be matched against the list to see if they contained any chemicals from this universe. If so, they would be considered for listing as "hazardous".

Appendix VIII deliberately included many listings that are large categories of chemicals. Many of the Appendix VIII listings, especially from the CAG and NIOSH lists, were laboratory curiosities, as opposed to commercial products. Chemicals were listed on Appendix VIII as they would exist in a pure state, as opposed to the forms they would be expected to take after being dispersed in the environment. For waste identification purposes these characteristics of Appendix VIII do not present a problem. In looking for hazardous waste EPA emphasized breadth of coverage. No attempt was made to examine factors such as amount of production or environmental fate in compiling Appendix VIII, although the hazardous waste listing regulations require EPA to consider such factors before listing a waste because it contains an Appendix VIII chemical (see 40 CFR 261.11(a) (3)). As a result, Appendix VIII contains both prevalent, mobile, and toxic chemicals that present major risks in ground water at hazardous waste sites (e.g., trichloroethene), and chemicals which do not present such risks (e.g., aflatoxins), because of factors such as low prevalence or instability in water.

On July 26, 1982, EPA promulgated RCRA regulations that implemented a strategy for ground-water protection for land-based hazardous waste management units operating under RCRA permits. Once ground-water contamination is suspected, the strategy requires an analysis to determine the nature of the contamination. This information is used to assess the problem, determine the appropriate remedy, determine when the remedy is effective, and insure that no new problems arise during the time the remedy is being applied. These regulations are described in greater detail in Section IV of this preamble. In an attempt to be totally comprehensive, the regulations provided that contaminated ground water be analyzed for all constitutents contained in Appendix VIII to Part 261.

Reexamination of that decision now seems necessary. While appropriate for hazardous waste listing purposes, the Appendix VIII list has presented a host of problems when used for purposes of ground-water monitoring. These include practical analytical problems such as listings which are large categories of chemicals, the dissociation or actual decomposition of many Appendix VIII constituents when placed in water, and the lack of analytical standards or suitable analytical methods for many constituents.

EPA has been aware of potential analytical problems with "Appendix VIII analysis" for some time, although the magnitude of the difficulties was not apparent until the analyses were actually attempted. At the time of promulgation of the 1982 regulations EPA acknowledged that it lacked analytical methods for nine of the Appendix VIII constituents. See 47 FR 32296 (July 26, 1982). When owners and operators of hazardous waste facilities began to attempt Appendix VIII analyses, however, EPA learned that analysis would be extremely difficult or impossible for a larger number of contituents.

EPA took several actions intended to mitigate the problems. For example, EPA recommended the use of enforcement discretion for some of the most intractable problems it had identified at the time. See the August 16, 1984 memorandum from Courtney Price and Lee Thomas on "Enforcing Ground-Water Monitoring Requirements in RCRA Part B Permit Applications" (background document 10). Also, in

1984, EPA proposed to eliminate 22 Appendix VIII constituents from the ground-water analysis requirements. 49 FR 38786 (October 1, 1984).

Comments on the October, 1984 proposal raised questions about a number of additional analytical problems. Also, EPA gathered further information from interactions between RCRA permitting authorities, owner/operators, and analytical laboratories. EPA's own experience with conducting ground-water screening analyses for its ground-water monitoring task force and analytical methods development confirmed many of these problems. These experiences demonstrated to EPA that analytical problems with Appendix VIII were far more serious than previously believed. It became clear that previous attempts at solutions had been almost totally inadequate and that a major change was required.

In response to this need, EPA convened a meeting on December 10–13, 1985, of some 30 technical experts. These experts came from EPA offices in Washington and elsewhere, from EPA laboratories, and from State offices and laboratories. The list of meeting participants is contained in background document 24. Many had advanced degrees and/or substantial laboratory experience. Over four days, they evaluated all of Appendix VIII with regard to the feasibility of analysis of the various constituents. They utilized the information contained in background documents 1–23 of this rulemaking and their own extensive experience. They identified a list of specific chemicals, derived from Appendix VIII, which they considered generally suitable for ground-water analyses at all facilities. They recommended that 25 additional chemicals, routinely analyzed in ground water by the Superfund office, also be analyzed.

The results of the December meeting have been summarized in a document entitled "Guidance on Issuing Permits to Facilities Required to Analyze Ground Water for Appendix VIII Constitutents". This document included the core list of chemicals proposed today. A notice of availability and request for comments on this guidance was placed in the **Federal Register** (51 FR 5561 (February 14, 1986)). The comment period closed on March 17, 1986. Comments received were generally favorable to EPA's approach, although some specific concerns were raised. A summary of comments received and EPA's responses follows. The complete comments are contained in background documents 26–41 of this rulemaking.

Comment: The changes to the monitoring requirement are appropriate but should go farther. Monitoring should be limited to those chemicals expected to be present at a given site.

Response: This concept will be evaluated in EPA's next phase of rulemaking involving ground-water monitoring. (See the discussion immediately below these comments, which describes the phases in detail.) In this proposal only analytical feasibility is being addressed. However, EPA generally believes that past waste disposal practices were not sufficiently controlled to allow certain knowledge of what was disposed of at a site.

Comment: The general technical principles used to develop the list are sound, and we agree that High Performance Liquid Chromatography (HPLC) is not currently feasible for unknown chemicals in ground water. However, there are a number of chemicals on the list recommended for analysis for which no standards are available, or, for which the standard analytical methods will not work.

Response: EPA agrees that there are still questions as to the analytical feasibility for some Appendix VIII chemicals. A number of these chemicals are specifically identified below. (See Section VII.A.) EPA is seeking public comment on this issue and will continue to evaluate the feasibility of analysis of chemicals on the core list before promulgation.

Comments: The new list is a reasonable starting point. However, some Appendix VIII chemicals which do not appear can, in fact, be analyzed. Also, some additional representatives of the categories should be added to bring the list closer to that used by the Superfund program.

Response: EPA is requesting comment on additional chemicals which it now believes may be analyzed. (See Section VII.A.) EPA agrees that some additions to the proposed ground-water monitoring list may be appropriate.

Comment: Dioxins should not be included on the core list. At many facilities the hazards of analysis pose a greater threat than the possibility of dioxin presence. Analysis for dioxins should, therefore, be targeted to specific facilities where their presence is suspected.

Response: Generally EPA believes that risks of site contamination outweight any risks of analysis. However, dioxins may be a special case. See Section VII.B., below, requesting comment on this issue.

Comment: The additional chemicals from the Superfund program include several metals which are non-toxic and ubiquitous in ground water. Analysis for these should not be required.

Response: EPA believes that analyses will aid in analyzing ground-water contamination by providing important information on the basic ground-water chemistry. See Section VII.C., below, for details.

Comment: The additional chemicals from the Superfund list are not appropriate for RCRA and should not be included in the RCRA list.

Response: Some Superfund chemicals are useful in characterizing ground-water chemistry, as discussed above. Others are important commercial chemicals frequently found at hazardous waste sites, either Superfund or RCRA and, therefore, useful in the ground-water monitoring program. See Section VII.C., below, for details. As a long range goal, EPA plans to harmonize ground-water monitoring in the Superfund and RCRA programs.

Comment: EPA should set levels of concern for each chemical and not require reporting of values below these levels.

Response: EPA's present regulations are based on the premise that any leakage of hazardous waste from a site may be of concern. If, in a particular situation, an owner/operator feels that the level of chemical that is leaking is small enough to be protective of human health and the environment he may apply for an alternate concentration limit (see 40 CFR 264.94(b)). EPA is gathering information on levels of concern for a variety of purposes and may, at some point, set general levels of concern on a chemical-by-chemical basis. This issue is outside of the scope of this rulemaking.

Comment: EPA needs to provide more detailed information on analytical methodology for these chemicals than presently exists in SW–846. Additionally, EPA should allow the use of the methods developed under section 304(h) of the Clean Water Act.

Response: EPA agrees with this comment and is engaged in a major effort to revise SW–846. A recent list of potential SW–846 methods for the proposed Appendix IX is given in background document 48. Additional information about possible methods is given in background documents 20, 42, and 43. At the present time the specific methods in SW–846 are not mandatory for the ground-water monitoring requirements in the RCRA regulations. Laboratories who wish to use the 304(h) methods, including the quality assurance and quality control procedures, to analyze appropriate

chemicals on the ground-water monitoring list, should generally find the results acceptable to permitting authorities. However, data must be provided for all RCRA chemicals, not merely those on the Clean Water Act priority pollutant list.

Comment: EPA should specify which chemicals on the ground-water monitoring list came from which categories on the Appendix VIII list.

Response: This information is available in background document 24 and the Index to the background documents for this rulemaking. See also section VII.A. and VII.F., below.

Today's proposal represents the first phase of a two-phase project on ground-water monitoring under RCRA. Based on EPA's examination of the analytical problems with Appendix VIII, we are proposing to replace ground-water monitoring of Appendix VIII with monitoring of a ground-water monitoring list of 250 specific chemicals (proposed Appendix IX to Part 264). The Regional Administrator also has the authority to require monitoring of other chemicals as needed on a site-specific basis. The Regional Administrator may impose these requirements by using the new "omnibus" authority for permit conditions needed to protect human health and the environment codified at 40 CFR 270.32(b)(2).

In addition to changes required by analytical problems, a strong case can be made that environmental protection would be enhanced by focusing on a priority list of chemicals. These two factors (analytical problems and environmental effectiveness) caused EPA's National Pollutant Discharge Elimination System (NPDES) program to reduce a list of thousands of "toxic" chemicals to a core list of 129 specific priority pollutants in implementing the NPDES toxic controls. A later proposal will address the issue of increasing the effectiveness of RCRA monitoring by focusing on a set of priority pollutants.

The core list was generated for purposes of general ground-water screening analyses only. It does not affect the use of Appendix VIII for other purposes such as listing hazardous wastes or conducting corrective action for releases to any other environmental medium.

III. Summary of Proposal

Today's proposal resolves the practical problems of conducting a broad ground-water screening by replacing the requirement to monitor for all Appendix VIII constituents with a requirement to monitor for all chemicals on a core list (proposed Appendix IX to Part 264) plus additional chemicals as required by the Regional Administrator on a site-specific basis. The core list was developed at the December 1985 meeting described above. It was derived by adding to Appendix VIII 25 chemicals routinely monitored in ground-water by the Superfund program, by deleting from Appendix VIII chemicals that are unstable in water, not amenable to EPA's standard analytical methods for screening (gas chromatography (GC) or gas chromatography/mass spectrometry (GC/MS) for organics, atomic absorption (AA) or inductively coupled plasma spectroscopy (ICAP) for metals), and by selecting appropriate representatives for ionic compounds and categories. Section V, below, details this process.

The Regional Administrator should consider several factors in deciding whether to require monitoring for additional chemicals. For on-site facilities these factors include whether a particular chemical is a known product or a known or suspected byproduct produced at the site. For off-site facilities they include whether the chemical is known or suspected to have been disposed at the site. In all cases the magnitude of any analytical problems should be considered. Background document 25, EPA's interim guidance on this issue (available through the RCRA Hotline, (800) 429-9346 or (202) 382-3000) will be useful in this regard. It lists the analytical problems identified in the December meeting for each Appendix VIII constituent not on the new Appendix IX to Part 264 list.

IV. Present Requirements for Monitoring Ground Water for Appendix VIII constituents

Regulations in Parts 264 and 270 establish a progressive sequence of ground-water monitoring requirements for land-based hazardous waste treatment storage, or disposal facilities. At specified points in the sequence, the owner or operator of any facility known or suspected to be leaking must analyze ground water for all Appendix VIII constituents to determine the nature and extent of the contamination. Two of those requirements appear in the regulations applying to units operating under RCRA permits. Where no ground-water contamination has been detected prior to permit issuance, the operating standards of Subpart F of Part 264 require the owner/operator to sample for selected indicator parameters under a detection monitoring program. If the owner/operator observes an increase in any indicator parameter, he must analyze immediately for all hazardous constituents listed in Appendix VIII to Part 261. 40 CFR 264.98(h))(2). The EPA Regional Administrator will then set "ground-water protection standards" based on the hazardous constituents found in this analysis. 40 CFR 264.92, 264.93, 264.99(a). The owner/operator must change to a compliance monitoring program focused on measuring increases in constituents for which ground-water protection standards were set. A separate provision in the compliance monitoring program, however, also requires the owner/operator to sample each monitoring well annually for all constituents on the Appendix VIII list. 40 CFR 264.99(f). The purpose of this annual scan is to allow EPA to consider setting additional ground-water protection standards for any new hazardous constituents found. Finally, if the level of a constituent exceeds a ground-water protection standard, the owner or operator must undertake corrective action. 40 CFR 264.100.

The third requirement for a complete Appendix VIII scan appears in the permit application requirements. If a plume of contamination has entered ground water prior to permit issuance, the permit application rules for land-based hazardous waste units require the owner or operator to conduct a full scan for "each" Appendix VIII constituent. 40 CFR 270.14(c)(4). If the scan detects hazardous constituents, the owner or operator must submit all data needed to establish a compliance monitoring or corrective action program. 40 CFR 270.14 (c)(7), (c)(8).

The standards for corrective action in § 264.100 also require owners and operators to implement a ground-water monitoring program that "may be based on the requirements for compliance monitoring under § 264.99 and must be as effective as that program in determining compliance with the ground-water protection standard . . . and in determining the success of the corrective action program . . .". 40 CFR 264.100(d). This provision does not explicity call for analysis of Appendix VIII constituents. It does, however, refer to the compliance monitoring program, which includes a requirement for an annual Appendix VIII scan. That annual Appendix VIII scan, however, is not directed at measuring compliance with the ground-water monitoring standard. Since corrective action monitoring is oriented toward determining compliance with the ground-water protection standard, EPA did not intend to incorporate the Appendix VIII scan from compliance monitoring into corrective action monitoring.

The Regional Administrator, however, may find it necessary in some cases to

require an owner or operator to test for all Appendix VIII constituents to determine the success of the corrective action program. For example, a corrective action program might consist of treatment directed at specific constituents rather than removal of an entire contaminated plume. Under those circumstances, the Regional Administrator might decide it would be necessary to analyze periodically for additional constituents to ensure that constituents which the treatment program did not address had not also started escaping from the hazardous waste unit.

V. Technical Problems and Proposed Solutions

Analyzing ground water for all Appendix VIII constituents is impossible for several reasons. Appendix VIII is ill-defined; some listings are ambiguous and others are indefinitely large classes of compounds. When placed in water some Appendix VIII constituents separate into ions which must be measured as such, while others actually react with water and decompose. Many Appendix VIII constituents are so rare that analytical standards are unavailable. While experience with analysis of many constituents is sparse, preliminary results indicate that many constituents are not measured adequately or even detected at all by EPA's standard analytical methods.

A. Ambiguous listings and categories

Ambiguous listings on Appendix VIII have been clarified with the addition of systematic names which specify the exact chemical structure. These names generally utilize the nomenclature of the Ninth Collective Index of Chemical Abstracts, and are generally known as "9CI" names. Chemical Abstracts Service Registry Numbers have been added.

Each of the categories of compounds was carefully examined. In most cases, some or all members of the category were already listed separately on Appendix VIII, and those separate listings have been chosen to represent the category. In other cases, it was possible to identify a single analyte, generally a metal, that adequately represented the category. In several instances EPA has decided to list as representatives chemicals that EPA earlier identified as priority pollutants under the Clean Water Act or for ground-water analysis under Superfund. EPA feels that such chemicals would make appropriate representatives of Appendix VIII categories because EPA has found that chemicals on these lists generally pose significant environmental threats. The priority pollutant list, for example, was based on production volumes and environmental risks. In a few cases there are no members of a category listed separately on Appendix VIII or on the other two lists. To avoid leaving these categories unrepresented, EPA has selected a common commercial chemical from the category as a representative.

B. Constituents Reactive with Water

Since ionic compounds dissociate in water, Appendix VIII analysis must focus on the inorganic anions and cations that are significant in ground water. Action is based on total levels of, for example, cadmium or cyanide, without regard for what compound was their source. Appendix VIII ionic constituents have, therefore, been replaced by listings of individual ions or elements. Constituents that decompose in water within approximately two days have been excluded from the proposed list.

C. Organometallic constituents

EPA has not found generally applicable and reliable analytical methods for detecting organometallic compounds. Methods EPA normally uses to identify organic compounds do not produce reliable data for chemicals that contain both organic and metallic components. Methods that identify metals can detect the metallic components of these compounds, but they cannot distinguish between these components and metallic ions from inorganic compounds or pure metals. Thus, a positive test for a metal would not allow EPA to conclude that it had identified an organometallic compound and the listing on Appendix VIII was based on the hazards of the compound, not the metal. Consequently, EPA is proposing not to include organometallic constituents on the new ground water monitoring list. All the metals included in these compounds are proposed for inclusion in this list for other reasons, so releases of organometallic compounds will still trigger monitoring and corrective action requirements.

D. Unavailable standards

Constituents without commercially available standards have also been excluded. It is possible to analyze for such constituents using similar chemicals as surrogate standards, but such data are inherently less reliable. For the purpose of this proposal, "unavailability" means that reasonably pure samples of a chemical are not generally available to analytical laboratories. While this decision was based on the difficulty of producing reliable analytical data without standards, EPA believes there will be serendipitous environmental benefits. The absence of commercially available standards means there is no market for the pure chemical. Also, most of the chemicals in this group are so complex as to be unlikely to be accidental byproducts. Consequently, the chemical is unlikely to be sent to hazardous waste facilities for disposal. Were EPA to require widespread analysis of such a chemical, it would create an incentive for a specialty chemical manufacturer to start production of the chemical for laboratory use—clearly an undesirable result.

E. Lack of standardizd test methods

Standard methods used in a variety of EPA programs for analysis of large groups of compounds in water are atomic absorption (AA) or inductively coupled plasma (ICP) for metals, gas chromatography/mass spectroscopy (GC/MS) for most organics, and gas chromatography (GC) for high sensitivity pesticide analysis. For some Appendix VIII constituents which are not amenable to these methods, high performance liquid chromatography (HPLC) has been proposed. Single-column HPLC, however, does not positively identify compounds and, therefore, is inappropriate for complex samples containing unknown constituents. These are precisely the conditions that apply when the regulations call for Appendix VIII analyses. This problem limits the usefulness of HPLC in this situation. EPA is actively pursuing research into multiple column HPLC systems or coupling HPLC with mass spectroscopy to address this problem. Until this is accomplished, HPLC analysis of complex ground water samples containing unknown chemicals is not feasible.

Some constituents that EPA preliminarily identified as analyzable by EPA's GC/MS methods have proven not to yield reliable results, so these constituents have been excluded from the new list. EPA is pursuing research into improved GC/MS methods to address this problem. However, EPA has decided not to exclude a number of compounds of limited volatility that do not respond to a conventional GC/MS analysis using conventional purge and trap sample preparation. EPA decided to recommend these compounds for routine analysis because they can be detected by using a heated purge and trap method to prepare for GC/MS. Heated purge and trap occurs in conjunction with GC in the RCRA methods and in

conjunction with GC/MS in other EPA methods. Background document 49 contains a list of Appendix IX chemicals EPA believes might be best analyzed by heated purge and trap. Background documents 20, 42, and 43 also contain some information on this topic.

EPA has received additional laboratory data since the core list was first drafted in December 1985. In the majority of cases this new data has confirmed the December list. In some cases the new data differs from the December list. This is not surprising since there is not much experience with analysis of these chemicals in ground water and laboratories may achieve different results due to subtle differences in analytical methods. Those chemicals for which there are conflicting data are listed in Section VII.A. below.

A series of background documents comprise the material that EPA used to develop the core list. They are available for examination as part of the public docket for this rulemaking. Documents 1–23 were distributed to the participants at the December meeting, and documents 24–49 were obtained after this meeting.

VI. Environmental Impacts

Environmental impacts were not specifically considered in the process which led to the derivation of the new list from Appendix VIII, with the exception of choosing representatives for ionic compounds or for categories. Only analytical feasibility was explicitly considered. However, EPA has recognized a number of environmental implications in the development of the new list.

In order to understand the environmental impacts of today's proposal, it is useful to consider the purpose of monitoring lists in pollution control programs and the nature of the monitoring lists used in other EPA programs. There are more than 70,000 chemicals in production in the U.S. (The Toxic Substances Control Act Inventory lists over 60,000, with several exclusions, such as non-commercial byproducts, pesticides, and drugs.) Many of these "chemicals" are actually complex combinations of individual chemical species (e.g., coal tar, which is a complex combination of hundreds of organic chemicals), so the actual number of unique chemical species produced is probably 2–10 times larger. Any potential monitoring list obviously represents a tiny subset, perhaps .0001 of the total. Therefore, a monitoring list does not attempt to exhaustively analyze pollution but rather seeks to provide an indication of pollution. The implied assumption is that by cleaning up these indicators we will adequately control other toxic chemicals.

This purpose implies a number of desirable characteristics of chemicals placed on monitoring lists. Since it is impractical to search exhaustively, they should be the most important chemicals, i.e., those produced in large volumes and likely to be found at many sites. Since they will be measured and actions will be based upon the results obtained over a period of time they should be able to be measured reliably and reproducibly. They should cover a range of environmental fate and transport characteristics since they will serve as surrogates for the fate and transport of a large number of chemicals. Finally, the list must be long enough to adequately reduce the possibility of a false negative result, where pollution exists that is not indicated by any of the indicators on the monitoring list.

There are insufficient data to quantify the last criteria and specify how long is long enough. However, the practices and experiences of other EPA offices are useful in forming an opinion. The Office of Water routinely monitors a list of 126 priority pollutants. In monitoring industry effluents, the Office generally only finds a fraction of these and has found it necessary to regulate only a smaller fraction, since those regulated also effectively regulate others on the list of 126. The Superfund office has routinely monitored 150 chemicals (the priority pollutants plus 24 additional high volume commercial chemicals) and has found that some of the list of 150 are found at many sites, while others are rarely, if ever, seen. The Offices of Air and Drinking Water routinely regulate fewer than 100 chemicals. At the December meeting, the experts agreed that some of the chemicals listed on the core list would be present at any site contaminated by any Appendix VIII chemical. Based on the experience of other EPA offices and the opinion of the technical experts at the December meeting, EPA has confidence that the new list is long enough to reduce the possibility of false negatives to a negligible level.

EPA did not explicitly consider production or prevalence in waste or ground water in developing the new list. Nevertheless, the new list tends to contain a higher proportion of prevalent chemicals than Appendix VIII does since there is a correlation between increasing availability of analytical methods and increasing occurrence of chemicals in the environment. This is due to a number of factors. The Clean Water Act and Superfund lists, for which analytical methods are available and which are included in toto in the new list, did take production into account when they were generated. Other common chemicals would tend to have analytical methods developed for commercial reasons other than specific EPA requirements. Those chemicals are enough for deletion as having no standard are generally uncommon.

In a few cases (formaldehyde is the most notable example), common chemicals do not appear on the new list because they present major analytical problems. EPA is focusing on these chemicals in its analytical methods research and will consider amending the list as soon as reliable analytical methods become available.

There are environmental benefits to a shorter list. Monitoring for more chemicals, especially with methods of poor reliability, increases the possibility of false positives, results that indicate contamination where there is none. The increased probability of false positives may cause pollution control agencies to take actions, such as providing a larger statistical range of "no action" results, or requiring resampling, which make control programs less effective or delay action. Laboratories, faced with analyzing a list of chemicals that contains some chemicals very difficult to analyze will tend to focus efforts on these chemicals, rather than on providing high quality data on the more easily analyzed (and generally more common) chemicals, such as the priority pollutants. This is because a small error on a common chemical is considerably less embarrassing than a major error on a rare one. However, from an environmental perspective, it may be considerably more important to have more precise data on the more common chemical, since a small change of the common chemical may be the most effective indicator of potential problems. Laboratory resources in this country have already expended considerable effort on trying to analyze some of the very difficult Appendix VIII analytes, when such efforts would be better spent on obtaining better quality results on common chemicals.

The core list proposed today also contains some parameters with very low toxicity (e.g., sodium). These parameters are intended to characterize the ground-water industry chemistry. See Section VII.C. below for details.

The new list was developed on the basis of analytical feasibility. As stated above (Section II. Background), EPA is continuing to evaluate the ground-water monitoring requirements and intends to propose further revisions based on other desirable monitoring characteristics such as those noted in the beginning of

this section. It is quite likely that an optimal monitoring list would be shorter than the 250 compounds proposed today.

VII. Specific Issues for Comment

A. Borderline Chemicals

For the following chemicals, EPA has received conflicting data with regard to analytical feasibility. This information is provided in the background documents. EPA specifically requests laboratory data on appropriate methods, availability of standards, recovery, and precision and accuracy of analysis of these chemicals. Data involving analysis in ground water at ppb levels would be particularly useful, since certain analytical problems arise specifically in such cases. EPA is proposing to include most of these chemicals on the new Appendix IX list, but is concerned because it has data indicating that analysis may be difficult. At the end of the list are approximately ten chemicals identified with asterisks which EPA is proposing to exclude from the new list, but which are being considered for inclusion if additional information indicates they are possible to analyze.

3-Chloropropionitrile	542-76-7
Propanenitrile, 3-chloro-	
Acetonitrile	75-05-8
Acetonitrile	
N-Nitrosomethylethylamine	10595-95-6
Ethanamine, N-methyl-nitroso-	
p-Benzoquinone	106-51-4
2,5-Cyclohexadiene-1,4-dione	
Resorcinol	108-46-3
1,3-Benzenediol	
Tris(2,3-dibromopropyl)phosphate	126-72-7
1-Propanol, 2,3-dibromo-, phosphate (3:1)	
Dibenzo(a,e)pyrene	192-65-4
Naphtho[1,2,3,4-def]chrysene	
Dibenzo(a,h)pyrene	189-64-0
Dibenzo[b,def]chrysene	
Dibenzo(a,i)pyrene	189-55-9
Benzo[rst]pentaphene	
Tetraethyldithiopyrophosphate	3689-24-5
Thiodiphosphoric acid ($(HO)_2$ P(S)]$_2$O), tetraethyl ester	
Malononitrile	109-77-3
Propanedinitrile	
Allyl alcohol	107-18-6
2-Propen-1-ol	
1,4-Dioxane	123-91-1
1,4-Dioxane	
Ethylene oxide	75-21-8
Oxirane	
2-Propyn-1-ol	107-19-7
2-Propyn-1-ol	
Isosafrole	120-58-1
1,3-Benzodioxole, 5-(1-propenyl)-	
Aniline	62-53-3
Benzenamine	
2-Acetylaminofluorene	53-96-3
Acetamide, N-9H-fluoren-2-yl-	
Benzenethiol	108-98-5
Benzenethiol	
Benzidine	92-87-5
[1,1'-Biphenyl]-4,4'-diamine	
2-Chloro-1,3-butadiene	126-99-8
1,3-Butadiene, 2-chloro-	
3-Chloropropene	107-05-1
1-Propene, 3-chloro-	
Dibromomethane	74-95-3
Methane, dibromo-	
Dichlorodifluoromethane	75-71-8
Methane, dichlorodifluoro-	
Diphenylamine	122-39-4
Benzenamine, N-phenyl-	
Ethyl cyanide	107-12-0
Propanenitrile	
Hexachlorophene	1888-71-7
1-Propene, 1,1,2,3,3,3-hexachloro-	
Iodomethane	74-88-4
Methane, iodo-	
Isobutyl alcohol	78-83-1
1-Propanol, 2-methyl-	
Kepone	143-50-0
1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	
alpha, alpha-Dimethylphenethylamine	122-09-8
Benzeneethanamine, α,α-dimethyl-	
2-sec-Butyl-4,6-dinitrophenol	88-85-7
Phenol, 2-(1-methylpropyl)-4,6-dinitro-	
Methacrylonitrile	126-98-7
2-Propenenitrile, 2-methyl-	
Methyl methacrylate	80-62-6
2-Propenoic acid, 2-methyl-, methyl ester	
N-Nitrosodimethylamine	62-75-9
Methanamine, N-methyl-N-nitroso-	
2-Picoline	109-06-8
Pyridine, 2-methyl-	
2-Propyn-1-ol	107-19-7
2-Propyn-1-ol	
2,4-Dichlorophenoxyacetic acid	94-75-7
Acetic acid, (2,4-dichlorophenoxy)-	
Isodrin	465-73-6
1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a,-hexahydro-, ($1_\alpha,4_\alpha,4a_\beta,5_\beta,8_\beta,8a_\beta$)-	
Dimethoate [1]	60-51-5
Phosphorodithioic acid, 0,0-dimethyl S-[2-methylamino)-2-oxoethyl]ester	
Diallate [1]	2303-16-4
Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	
Crotonaldehyde [1]	4170-30-3
2-Butenal	
Paraldehyde [1]	123-63-7
1,3,5-Trioxane, 2,4,6-trimethyl-	
o-Toluidine [1]	95-53-4
Benzenamine, 2-methyl-	
meta-Cresol [2]	108-39-4
Phenol, 3-methyl-	
Endrin ketone [2]	53494-70-5
2,5,7-Metheno-3H-cyclopenta[a]pentalen-3-one, 3b,4,5,6,6,6a-hexachlorodecahydro-, (2_α, $3a_\beta$, $3b_\beta$, 4_β, 5_β, $6a_\beta$, 7_α, $7a_\beta$, 8R [1])-	
Endosulfan sulfate [2]	1031-07-8
6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide	
Strontium (total) [2]	7440-24-6
Strontium	
1,3-Dichloro-2-propanol [2]	96-23-1
2-Propanol, 1-3-dichloro-	

[1] Not presently on core list because of analytical problems.
[2] Not presently on core list—inorganic ion or part of a category.

B. Dioxin Analysis

Requiring analysis of dioxins may present an environmental risk. To perform these analyses, dioxin standards must be manufactured, handled in the laboratory, and disposed. EPA has published analytical methods for dioxin (49 FR 136 (October 26, 1984)). In these methods, EPA has provided special safety measures for performing these analyses and recommends that only specially equipped laboratories do these analyses. It is possible that overall environmental protection would best be served by limiting these analyses to specific sites. These sites would include all commercial sites that accept off-site wastes and all on-site disposal units that accept wastes from processes known or suspected to create dioxins or dibenzofurans, such as the manufacture of 2,4,5-trichlorophenol. EPA is proposing to include these chemicals on the core list but requests comments on whether they should remain on the core list.

C. Monitoring, Ground-Water Protection Standards, and Corrective Action

Under the existing regulations, the detection of an Appendix VIII constituent in ground water will generally trigger requirements for ground-water protection standards and, if necessary, corrective action (see section IV, above, for details). In proposing Appendix IX as a ground-water monitoring list, EPA envisions a broader use. Some chemicals on Appendix IX (e.g., sodium) are generally not toxic and may be present naturally in high concentrations. The principal purpose of analyzing for these chemicals is to provide valuable information about ground-water chemistry and movement.

The strategy EPA is proposing would generally limit setting ground-water protection standards and requiring corrective action to chemicals listed on Appendix VIII. EPA considers all members of categories on Appendix VIII, including those listed individually on Appendix IX, to be subject to these requirements.

The Appendix IX chemicals not generally subject to these requirements are the 25 additional chemicals routinely analyzed by the Superfund program. EPA has not yet evaluated these chemicals and determined that they are "hazardous", as it has for Appendix VIII. See 47 FR 32296 (July 26, 1982). However, if one of these chemicals is detected and the Regional Administrator can document a threat to human health or the environment he may use the "omnibus" authority of 40 CFR 270.32(b)(2) and section 3005(c)(3) of RCRA, as amended, to set ground-water protection standards and require corrective action.

EPA is also considering including certain common ground-water anions to Appendix IX, to further characterize ground-water chemistry. The anions currently under consideration are chloride, sulfate, nitrate, and bicarbonate.

EPA requests comments on the concept of including chemicals on Appendix IX for purposes of characterizing ground-water chemistry and movement, the addition of the 25 Superfund chemicals, and the list of anions.

D. Discretionary Additions

In today's proposal, EPA is proposing to require monitoring of all constituents

on the new Appendix IX list. This is done with the understanding that the Regional Administrator (RA) may require analysis of chemicals outside Appendix IX under the authority of 40 CFR 270.32(b)(2) and section 3005(c)(3) of RCRA, as amended by the 1984 amendments. Other options under consideration would be to give the RA's explicit discretion in the regulation to add constituents from the Appendix VIII list or to add constituents in or derived from the waste. EPA solicits comments on these options.

E. Ordering of Appendix IX

In the interim guidance document the core list was ordered in the same manner as Appendix VIII. That was approximately by common name, except that representatives of categories were listed in the place where the category was listed on Appendix VIII. In today's proposal, Appendix IX is ordered alphabetically by systematic name. This has the virtues of being easier to search for a specific chemical and of grouping chemicals of similar structure together (e.g., pesticides based on phosphorothioic acid). Another conceivable ordering would be by CAS number, which has the virtue of being the easiest to search, if the CAS number of a chemical is available. EPA requests comments on which of these three ordering schemes to use for the final Appendix IX list.

F. Representatives of Categories

As detailed above in Section V.A., EPA has selected representatives of the categories of chemicals on Appendix VIII. Section VII.A. above lists some additional representatives of categories under consideration for addition to the core list (those chemicals identified by a double asterisk). A detailed account of which chemicals on Appendix IX of Part 264 represent which categories from Appendix VIII of Part 261 is available in background document 24 and the Index to the background documents for this rulemaking. EPA requests comment on its choices of representatives for the categories.

VIII. Regulatory Analysis

A. State Authority

Under Section 3006 of RCRA, EPA may authorize qualified States to administer and enforce their State hazardous waste management programs in lieu of EPA operating the Federal program in those States. Authorization, either interim or final, may be granted to State programs that regulate the identification, generation, transportation, or operation of facilities that treat, store, or dispose of hazardous waste. Upon authorization of the State program, EPA suspends operation within the States of those parts to the ground-water monitoring requirements for land-based hazardous waste management facilities applying for and operating under permits. Since the ground-water monitoring requirements are not imposed under any of the amendments made by the Hazardous and Solid Waste Amendments of 1984, final rules modifying the constituent list would not take effect directly in all States under section 3006(g). Rather, if EPA promulgates this proposal, States that have been granted final authorization will have to revise their programs to cover the additional requirements in today's announcement. Generally, these authorized State programs must be revised within one year of the date of promulgation of such standards, or within two years if the State must amend or enact a statute in order to make the required revision. See 40 CFR 271.21. Since States may always impose requirements which are more stringent or have greater coverage than EPA's programs, States will not be required to revise their regulations to reflect any deletions of constituents from the current monitoring requirements after promulgation, although they may choose to do so. Regulations which are broader in scope, however, may not be enforced as part of the federally-authorized RCRA program.

B. Executive Order 12291—Regulatory Impact

Executive Order 12291 (46 FR 13191, February 9, 1981) requires that a regulatory agency determine whether a new regulation will be "major" and if so, that a Regulatory Impact Analysis be conducted. A major rule is defined as a regulation that is likely to result in:

(1) An annual effect on the economy of $100 million or more;

(2) A major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies or geographic regions; or

(3) Significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Administrator has determined that today's proposal is not a major rule. It should produce a net decrease in the total number of chemicals analyzed at each facility and, thus, imposes no increased costs.

C. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., whenever an agency is required to publish a general notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis which describes the impact of the rule on small entities (i.e., small business, small organizations, and small governmental jurisdiction). The Administrator may certify, however, that the rule will not have a significant economic impact on a substantial number of small entities. As stated above, this proposal will have no adverse impacts on businesses of any size. Accordingly, I hereby certify that this proposed regulation will not have a significant economic impact on a substantial number of small entities. This regulation therefore does not require a regulatory flexibility analysis.

List of Subjects

40 CFR Part 264

Hazardous materials, Reporting and recordkeeping requirements, Waste treatment and disposal, Water supply, Ground water, Environmental monitoring.

40 CFR Part 270

Hazardous materials, Reporting and recordkeeping requirements, Waste treatment and disposal, Water supply, Administrative practice and procedure, Ground water, Environmental monitoring.

Dated: July 14, 1986.

Lee M. Thomas,

Administrator.

For the reasons set out in the preamble it is proposed to amend Title 40 of the Code of Federal Regulations as follows:

PART 264—[AMENDED]

1. The authority citation for Part 264 continues to read as follows:

Authority: Secs. 1006, 2002(a), and 3004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), and 6924).

2. Section 264.98 is amended by revising paragraphs (h)(2), (h)(3) introductory text and (h)(4)(i) to read as follows:

§ 264.98 Detection monitoring program.

* * * * *

(h) * * *

(2) Immediately sample the ground water in all monitoring wells and determine whether constituents

identified in the list in Appendix IX of Part 264 are present and, if so, at what concentration.

* * * * *

(3) Establish a background value for each constituent that has been found at the compliance point under paragraph (h)(2) of this section, as follows:

* * * * *

(4) * * *

(i) An identification of the concentration of any constituent from Appendix IX to Part 264 found in the ground water at each monitoring well at the compliance point;

* * * * *

3. Section 264.99 is amended by revising paragraph (f) to read as follows:

§ 264.99 Compliance monitoring program.

* * * * *

(f) The owner or operator must analyze samples from all monitoring wells at the compliance point to determine whether constituents identified in the list in Appendix IX to Part 264 of this chapter are present and, if so, at what concentration. The analysis must be conducted at least annually to determine whether additional Appendix IX constituents are present in the uppermost aquifer. If the owner or operator finds constituents from Appendix IX in the ground water that are not already identified in the permit as monitoring constituents, the owner or operator must report the concentration of these additional constituents to the Regional Administrator within seven days after completion of the analysis.

* * * * *

4. A new Appendix VII and Appendix VIII are added to Part 264 and reserved as follows:

Appendix VII [Reserved]

Appendix VIII [Reserved]

5. A new Appendix IX is added to Part 264 as follows:

APPENDIX IX.—GROUND-WATER MONITORING LIST

Systematic name	CAS RN	Common name
Acenaphthylene	208-96-8	Acenaphthalene.
Acenaphthylene, 1,2-dihydro-	83-32-9	Acenaphthene.
Acetamide, N-(4-ethoxyphenyl)-H	62-44-2	Phenacetin.
Acetamide, N-9H-fluoren-2-yl	53-96-3	2-Acetylaminofluorene.
Acetic acid ethenyl ester	108-05-4	Vinyl acetate.
Acetic acid, (2,4,5-trichlorophenoxy)-	93-76-5	2,4,5-T.
Acetic acid, (2,4-dichlorophenoxy)-	94-75-7	2,4-Dichlorophenoxyacetic acid.
Acetonitrile	75-05-8	Acetonitrile.
Aluminum	7429-90-5	Aluminum (total).
Anthracene	120-12-7	Anthracene.
Antimony	7440-36-0	Antimony (total).
Aroclor 1016	12674-11-2	Aroclor 1016.
Arcolor 1221	11104-28-2	Aroclor 1221.
Aroclor 1232	11141-16-5	Aroclor 1232.
Aroclor 1242	53469-21-9	Aroclor 1242.
Aroclor 1248	12672-29-6	Aroclor 1248.
Aroclor 1254	11097-69-1	Aroclor 1254.
Aroclor 1260	11096-82-5	Aroclor 1260.
Arsenic	7440-38-2	Arsenic (total).
Barium	7440-39-3	Barium (total).
Benz[a]anthracene, 7,12-dimethyl-	57-97-6	7,12-Dimethylbenz[a]anthracene.
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	56-49-5	3-Methylcholanthrene.
Benz[e]acephenanthrylene	205-99-2	Benzo[b]fluoranthene.
Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	23950-58-5	Pronamide.
Benz[a]anthracene	56-55-3	Benz[a]anthracene.
Benzenamine	62-53-3	Aniline.
Benzenamine, 2-methyl-5-nitro	99-55-8	5-Nitro-o-toluidine.
Benzenamine, 2-nitro	88-74-4	2-Nitroaniline.
Benzenamine, 3-nitro	99-09-2	3-Nitroaniline.
Benzenamine, 4-chloro-	106-47-8	p-Chloroaniline.
Benzenamine, 4-nitro-	100-01-6	p-nitroaniline.
Benzenamine, 4,4'-methylenebis[2-chloro	101-14-4	4,4'-Methylenebis(2-chloroaniline).
Benzenamine, N-nitroso-N-phenyl-	86-30-6	N-Nitrosodiphenylamine.
Benzenamine, N-phenyl-	122-39-4	Diphenylamine.
Benzenamine, N,N-dimethyl-4-(phenylazo)-	60-11-7	p-Dimethylaminoazobenzene.
Benzene	71-43-2	Benzene.
Benzene, 1-bromo-4-phenoxy-	101-55-3	4-Bromophenyl phenyl ether.
Benzene, 1-chloro-4-phenoxy-	7005-72-3	4-Chlorophenyl phenyl ether.
Benzene, 1-methyl-2,4-dinitro-	121-14-2	2,4-Dinitrotoluene.
Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-	50-29-3	DDT.
Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-	72-43-5	Methoxychlor.
Benzene 1,1'-(2,2-dichloroethylidene)bis[4-chloro-	72-54-8	DDD.
Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-	72-55-9	DDE.
Benzene, 1,2-dichloro-	95-50-1	o-Dichlorobenzene.
Benzene, 1,2,4-trichloro-	120-82-1	1,2,4-trichlorobenzene.
Benzene, 1,2,4,5-tetrachloro	95-94-3	1,2,4,5-Tetrachlorobenzene.
Benzene, 1,3-Dichloro-	541-73-1	M-Dichlorobenzene.
Benzene, 1,4-dichloro-	106-46-7	p-Dichlorobenzene.
Benzene, 1,4-dinitro-	100-25-4	meta-Dinitrobenzene.
Benzene, 2-methyl-1,3-dinitro-	606-20-2	2,6-Dinitrotoluene.
Benzene, chloro-	108-90-7	Chlorobenzene.
Benzene, dimethyl-	1330-20-7	Xylene (total).
Benzene, ethenyl-	100-42-5	Styrene.
Benzene, ethyl-	100-41-4	Ethyl benzene.
Benzene, hexachloro-	118-74-1	Hexachlorobenzene.
Benzene, methyl	108-88-3	Toluene.
Benzene, nitro-	98-95-3	Nitrobenzene.
Benzene, pentachloro-	608-93-5	Pentachlorobenzene.
Benzene, pentachloronitro-	82-68-8	Pentachloronitrobenzene.
Benzeneacetic acid, 4-chloro-α-(4-chlorophenyl)-α-hydroxy-, ethyl ester	510-15-6	Chlorobenzilate.
1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester	117-81-7	Bis(2-ethylhexyl) phthalate.
1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	85-68-7	Butyl benzyl phthalate.
1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2	Di-n-butyl phthalate.
1,2-Benzenedicarboxylic acid, diethyl ester	84-66-2	Diethyl phthalate.
1,2-Benzenedicarboxylic acid, dimethyl ester	131-11-3	Dimethyl phthalate.
1,2-Benzenedicarboxylic acid, dioctyl ester	117-84-0	Di-n-octyl phthalate.

APPENDIX IX.—GROUND-WATER MONITORING LIST—Continued

Systematic name	CAS RN	Common name
1,3-Benzenediol	108-46-3	Resorcinol.
Benzeneethanamine, α, α-dimethyl-	122-09-8	alpha, alpha-Dimethylphenethylamine.
Benzenemethanol	100-51-6	Benzyl alcohol.
Benzenethiol	108-98-5	Benzenethiol.
1,3-Benzodioxole, 5-(1-propenyl)-	120-58-1	Isosafrole.
1,3-Benzodioxole, 5-(2-propenyl)-	94-59-7	Safrole.
Benzo[k]fluoranthene	207-08-9	Benzo(k)fluoranthene.
Benzoic acid	65-85-0	Benzoic acid.
Benzo[rst]pentaphene	189-55-9	Dibenzo[a,i]pyrene.
Benzo[ghi]perylene	191-24-2	Benzo(ghi)perylene.
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene.
Beryllium	7440-41-7	Beryllium (total).
1,1'-Biphen[yl]-4,4'-diamine, 3,3'-dichloro-	91-94-1	3,3'-Dichlorobenzidine.
1,1'-Biphen[yl]-4,4'-diamine, 3,3'-dimethoxy-	119-90-4	3,3'-Dimethoxybenzidine.
1,1'-Biphen[yl]-4,4'-diamine, 3,3'-dimethyl-	119-93-7	3,3'-Dimethylbenzidine.
1,1'-Bipenyl[-4-amine	92-67-1	4-Aminobiphenyl.
1,1'-Bipenyl[-4-4-diamine	92-87-5	Benzidine.
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87-68-3	Hexachlorobutadiene.
1,3-Butadiene, 2-chloro-	126-99-8	2-Chloro-1,3-butadiene.
1-Butanamine, N-butyl-N-nitroso-	924-16-3	N-Nitrosodi-n-butylamine.
2-Butanone	78-93-3	Methyl ethyl ketone.
2-Butene, 1,4-dichloro-, (E)-	110-57-6	trans-1,4-Dichloro-2-butene.
Cadmium	7440-43-9	Cadmium (total).
Calcium	7440-70-2	Calcium (total).
Carbon disulfide	75-15-0	Carbon disulfide.
Chromium	7440-47-3	Chromium (total).
Chrysene	218-01-9	Chrysene.
Cobalt	7440-48-4	Cobalt (total).
Copper	7440-50-8	Copper (total).
Cyanide	57-12-5	Cyanide.
2,5-Cyclohexadiene-1,4-dione	106-51-4	p-Benzoquinone.
Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3β,4α,5β,6β)-	319-84-6	alpha-BHC.
Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2β,3α,4β,5α,6β)-	319-85-7	beta-BHC.
Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3α,4β,5α,6β)-	319-86-8	delta-BHC.
Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3β,4α,5α,6β)-	58-89-9	gamma-BHC.
2-Cyclohexen-1-one, 3,5,5-trimethyl	78-59-1	Isophorone.
1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77-47-4	Hexachlorocyclopentadiene.
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene.
Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro-	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin.
		Hexachlorodibenzo-p-dioxins.
		Pentachlorodibenzo-p-dioxins.
		Tetrachlorodibenzo-p-dioxins.
Dibenzo[b,def]chrysene	189-64-0	Dibenzo[a,h]pyrene.
Dibenzofuran	132-64-9	Dibenzofuran.
		Hexachlorodibenzofurans.
		Pentachlorodibenzofurans.
		Tetrachlorodibenzofurans.
2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, 1aα,2β,2aα,3β,6β,6aα,7β, 7aα)-.	60-57-1	Dieldrin.
2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, 1aα,,2β,2aβ,3α,6α,6aβ,7β, 7aα)-.	72-20-8	Endrin.
1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, 1aα,4α,4aβ,5α,8α,8aβ)-	309-00-2	Aldrin.
1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, 1aα,4α,4aβ,5β,8β,8aβ)-	465-73-6	Isodrin.
1,4-Dioxane	123-91-1	1,4-Dioxane.
Ethanamine, N-ethyl-N-nitroso-	55-18-5	N-Nitrosodiethylamine.
Ethanamine, N-methyl-N-nitroso-	10595-95-6	N-Nitrosomethylethylamine.
Ethane, 1,1-dichloro-	75-34-3	1,1-Dichloroethane.
Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-	111-91-1	Bis(2-chloroethoxy)methane.
Ethane, 1,1'-oxybis[2-chloro-	111-44-4	Bis(2-chloroethyl) ether.
Ethane, 1,1'-trichloro-	71-55-6	1,1,1-Trichloroethane.
Ethane, 1,1,1,2-tetrachloro-	630-20-6	1,1,1,2-Tetrachloroethane.
Ethane, 1,1,2-trichloro-	79-00-5	1,1,2-Trichloroethane.
Ethane, 1,1,2,2-tetrachloro-	79-34-5	1,1,2,2-Tetrachloroethane.
Ethane, 1,2-dibromo-	106-93-4	1,2-Dibromoethane.
Ethane, 1,2-dichloro-	107-06-2	1,2-Dichloroethane.
Ethane, chloro-	75-00-3	Chloroethane.
Ethane, hexachloro-	67-72-1	Hexachloroethane.
Ethane, pentachloro-	76-01-7	Pentachloroethane.
1,2,-Ethanediamine, N,N-dimethyl-N'-'-2-pyridinyl-N'-(2-thienylmethyl)-	91-80-5	Methapyrilene.
Ethanone, 1-phenyl-	98-86-2	Acetophenone.
Ethene, (2-chloroethoxy)-	110-75-8	2-Chloroethyl vinyl ether.
Ethene, 1,1-dichloro-	75-35-4	1,1-Dichloroethylene.
Ethene, 1,2-dichloro-, (E)-	156-60-5	trans-1,2-Dichloroethene.
Ethene, chloro-	75-01-4	Vinyl chloride.
Ethene, tetrachloro-	127-18-4	Tetrachloroethene.
Ethene, trichloro-	79-01-6	Trichloroethene.
Fluoranthene	206-44-0	Fluoranthene.
Fluoride	16984-48-8	Fluoride.
9H-Fluorene	86-73-7	Fluorene.
2-Hexanone	591-78-6	2-Hexanone.
Hydrazine, 1,2-diphenyl-	122-66-7	1,2-Diphenylhydrazine.
Indeno[1,2,3-cd]pyrene	193-39-5	Indeno(1,2,3-cd)pyrene.
Iron	7439-89-6	Iron (total).
Lead	7439-92-1	Lead (total).
Manesium	7439-94-4	Magnesium (total).
Manganese	7439-96-5	Manganese (total).
Mercury	7439-97-6	Mercury (total).
Methanamine, N-methyl-N-nitroso-	62-75-9	N-Nitrosodimethylamine.
Methane, bromo-	74-83-9	Bromomethane.
Methane, bromodichloro-	75-27-4	Bromodichloromethane.
Methane, chloro-	74-87-3	Chloromethane.
Methane, dibromo-	74-95-3	Dibromomethane.

APPENDIX IX.—GROUND-WATER MONITORING LIST—Continued

Systematic name	CAS RN	Common name
Methane, dibromochloro-	124-48-1	Chorodibromomethane.
Methane, dichloro-	75-09-2	Dichloromethane.
Methane, dichlorodifluoro-	75-71-8	Dichlorodifluoromethane.
Methane, iodo-	74-88-4	Iodomethane.
Methane, tetrachloro-	56-23-5	Carbon tetrachloride.
Methane, tribromo-	75-25-2	Tribromomethane.
Methane, trichloro-	67-66-3	Chloroform.
Methane, trichlorofluoro-	75-69-4	Trichloromonofluoromethane.
Methanesulfonic acid, methyl ester	66-27-3	Methyl methanesulfonate.
Methanethiol, trichloro-	75-70-7	Trichloromethanethiol.
4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro	57-74-9	Chlordane.
4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	76-44-8	Heptachlor.
2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a-hexahydro-, (1aα,1bβ,2α,5α,5aβ,6β,6aα)	1024-57-3	Heptachlor epoxide.
6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aβ,6α,9α,9aβ)	959-98-8	Endosulfan I.
6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aα,6β,9β,9aα)	33213-65-9	Endosulfan II.
1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	143-50-0	Kepone.
1,2,4-Methenocyclopenta[cd]pentalene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, (1α,2β,2aβ,4β,4aβ,5β,6aβ, 6bβ,7R*).	7421-93-4	Endrin aldehyde.
Morpholine, 4-nitroso-	59-89-2	N-Nitrosomorpholine.
1-Naphthalenamine	134-32-7	1-Naphthylamine.
2-Naphthalenamine	91-59-8	2-Naphthylamine.
Naphthalene	91-20-3	Naphthalene.
Naphthalene, 2-chloro-	91-58-7	2-Chloronaphthalene.
Naphthalene, 2-methyl-	91-57-6	2-Methylnaphthalene.
1,4-Naphthalenedione	130-15-4	1,4-Naphthoquinone.
Naphtho[1,2,3,4-def]chrysene	192-65-4	Dibenzo[a,e]pyrene.
Nickel	7440-02-0	Nickel (total).
Osmium	7440-04-2	Osmium (total).
Oxirane	75-21-8	Ethylene oxide.
2-Pentanone, 4-methyl-	108-10-1	4-Methyl-2-pentanone.
Phenanthrene	85-01-8	Phenanthrene.
Phenol	108-95-2	Phenol.
Phenol, 2-(1-methylpropyl)-4,6-dinitro-	88-85-7	2-sec-Butyl-4,6-dinitrophenol.
Phenol, 2-chloro-	95-57-8	2-Chlorophenol.
Phenol, 2-methyl-	95-48-7	ortho-Cresol.
Phenol, 2-methyl-4,6-dinitro-	534-52-1	4,6-Dinitro-o-cresol.
Phenol, 2-nitro-	88-75-5	2-Nitrophenol.
Phenol, 2,2¹-methylenebis[3,4,6-trichloro-	70-30-4	Hexachlorophene.
Phenol, 2,3,4,6-tetrachloro-	58-90-2	2,3,4,6-Tetrachlorophenol.
Phenol, 2,4-dichloro-	120-83-2	2,4-Dichlorophenol.
Phenol, 2,4-dimethyl-	105-67-9	2,4-Dimethylphenol.
Phenol, 2,4-dimethyl-	105-67-9	2,4-Dimethylphenol.
Phenol, 2,4-dinitro-	51-28-5	2,4-Dinitrophenol.
Phenol, 2,4,5-trichloro-	95-95-4	2,4,5-Trichlorophenol.
Phenol, 2,4,6-trichloro-	88-06-2	2,4,6-Trichlorophenol.
Phenol, 2,6-dichloro-	87-65-0	2,6-Dichlorophenol.
Phenol, 4-chloro-3-methyl-	59-50-7	p-Chloro-m-cresol.
Phenol, 4-methyl-	106-44-5	para-Cresol.
Phenol, 4-nitro-	100-02-7	4-Nitrophenol.
Phenol, pentachloro-	87-86-5	Pentachlorophenol.
Phosphorodithioic acid, 0,0-diethyl S-[(ethylthio)methyl] ester	298-02-2	Phorate.
Phosphorodithioic acid, 0,0-diethyl S-[2-(ethylthio)ethyl] ester	298-04-4	Disulfoton.
Phosphorothioic acid, 0-[4-[(dimethylamino)sulfonyl]phenyl] 0,0-dimethyl ester	52-85-7	Famphur.
Phosphorothioic acid, 0,0-diethyl 0-(4-nitrophenyl) ester	56-38-2	Parathion.
Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester	297-97-2	0,0-Diethyl 0-2-pyrazinyl phosphorothioate.
Phosphorothioic acid, 0,0-dimethyl 0-(4-nitrophenyl) ester	298-00-0	Methyl parathion.
Piperidine, 1-nitroso-	100-75-4	N-Nitrosopiperidine
Potassium	7440-09-7	Potassium (total)
1-Propanamine, N-nitroso-N-propyl-	621-64-7	Di-n-propylnitrosamine
Propane, 1,2-dibromo-3-chloro-	96-12-8	1,2-Dibromo-3-chloropropane
Propane, 1,2-dichloro-	78-87-5	1,2-Dichloropropane
Propane, 1,2,3,-trichloro-	96-18-4	1,2,3-Trichloropropane
Propane, 2,2'-oxybis[1-chloro-	108-60-1	Bis(2-chloroisopropyl) ether.
Propanedinitrile	109-77-3	Malononitrile.
Propanenitrile	107-12-0	Ethyl cyanide.
Propanenitrile, 3-chloro-	542-76-7	3-Chloropropionitrile.
Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	93-72-1	Silvex.
1-Propanol, 2,3-dibromo-, phosphate (3:1)	126-72-7	Tris(2,3-dibromopropyl) phosphate.
1-Propanol, 2-methyl-	78-83-1	Isobutyl alcohol.
2-propanone	67-64-1	Acetone.
2-Propenal	107-02-8	Acrolein.
1-Propene, 1,1,2,3,3,3-hexachloro-	1888-71-7	Hexachloropropene.
1-Propene, 1,3-dichloro-, (E)-	10061-02-6	trans-1,3-Dichloropropene.
1-Propene, 1,3-dichloro-, (Z)	10061-01-5	cis-1,3-Dichloropropene.
1-Propene, 3-chloro-	107-05-1	3-Chloropropene.
2-Propenenitrile, 2-methyl-	126-98-7	Methacrylonitrile.
2-Propenenitrile	107-13-1	Acrylonitrile.
2-Propenoic acid, 2-methyl-, ethyl ester	97-63-2	Ethyl methacrylate.
2-Propenoic acid, 2-methyl-, methyl ester	80-62-6	Methyl methacrylate.
2-Propen-1-ol	107-18-6	Allyl alcohol.
2-Propyn-1-ol	107-19-7	2-Propyn-1-ol.
Pyrene	129-00-0	Pyrene.
Pyridine	110-86-1	Pyridine.
Pyridine, 2-methyl-	109-06-8	2-Picoline.
Pyrrolidine, 1-nitroso-	930-55-2	N-Nitrosopyrrolidine.
Selenium	7782-49-2	Selenium (total).
Silver	7440-22-4	Silver (total).
Sodium	7440-23-5	Sodium (total).
Sulfide	18496-25-8	Sulfied.
Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	140-57-8	Aramite.
Thallium	7440-28-0	Thallium (total).
Thiodiphosphoric acid ([HO)$_2$P(S)]$_2$O), tetraethyl ester	3689-24-5	Tetraethyldithiopyrophosphate.

APPENDIX IX.—GROUND-WATER MONITORING LIST—Continued

Systematic name	CAS RN	Common name
Tin	7440-31-5	Tin (total).
Toxaphene	8001-35-2	Toxaphene.
Vanadium	7440-62-2	Vanadium (total).
Zinc	7440-66-6	Zinc (total).

PART 270—[AMENDED]

6. Section 270.14(c) is amended by revising paragraph (c)(4)(ii) to read as follows:

§ 270.14(c) Contents of Part B: General Requirements.

* * * * *

(c) * * *

(4) * * *

(ii) Identifies the concentration of each Appendix IX, of Part 264 of this chapter, constituent throughout the plume, or identifies the maximum concentrations of each Appendix IX constituent in the plume.

[FR Doc. 86-16532 Filed 7-23-86; 8:45 am]

BILLING CODE 6560-50-M