Department of Energy
Washington, DC 20585
December 10, 1999

RCRA Docket Information Center
Office of Solid Waste (5305G)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Docket Number F-1999-IDWA-FFFFF

Dear Madam or Sir:

Re: 64 FR 31576-31583, "Voluntary Guide for Industrial Waste Management"

On June 11, 1999, the U.S. Environmental Protection Agency (EPA) released its *Guide for Industrial Waste Management* (EPA 530-R-99-001, May 1999). The Guide was released in draft as a voluntary guide that was designed to assist facility managers, state and tribal environmental managers, and the public to evaluate and choose protective practices for managing industrial waste in new landfills, waste piles, surface impoundments, and land application units. Notice of the release of the draft Guide was provided in the Federal Register (64 FR 31576-31583, June 11, 1999), with a request for public comments.

The U.S. Department of Energy (DOE) has reviewed the Guide and, overall, believes that it offers much needed guidance on the management of industrial (nonhazardous) waste. The Guide offers practical operating tools and common sense activities that can be used to foster a sound waste management program that protects human health and the environment.

While overall, the Department agrees with many aspects of the Guide, there are areas where the Department believes that there is need for improvement. In consideration, DOE has developed a number of comments, provided herein. These comments are intended to increase the overall effectiveness of the Guide. First, general comments are provided. These comments pertain primarily to major issues associated with the Guide, but also address considerations that cross-cut throughout the Guide. Then, specific comments are provided. Specific comments identify the applicable section of the Guide, the FRN, or both, as appropriate, to which they pertain.

If you have any questions or need further clarification of our comments, please contact Al Sikri of my staff at (202) 586-1879 or e-mail at: *atam.sikri@eh.doe.gov*.

Sincerely,

Thomas T. Traceski
Director, RCRA/CERCLA Division
Office of Environmental Policy and Assistance

Enclosure

U.S. Department of Energy (DOE)
Comments On
EPA Guide For Industrial Waste Management
(EPA 530-R-99-001, May 1999 - 64 FR 31576-31583, June 11, 1999)

GENERAL COMMENTS

1) The Guide should be modified to clearly recognize the inherent and fundamental difference between hazardous and nonhazardous waste. The Guide should be used solely to facilitate effective management of nonhazardous waste.

The RCRA Program establishes, under Subtitle C, regulations for the management of hazardous waste (40 CFR Parts 260-271). These regulations define very specific and stringent standards for the management of hazardous waste. Included, for example, are: double liners, leachate collection systems and ground-water monitoring for most land-based units; comprehensive waste characterization requirements for permitting; waste treatment requirements; requirements for complex site assessments; and many others, too numerous to list in these comments. These same standards are included in the Guide as options for management of nonhazardous industrial waste.

DOE's position is that if these stringent provisions, typically reserved for RCRA hazardous waste, are truly necessary for "industrial wastes," then EPA and the States should be regulating them, under RCRA Subtitle C, as hazardous waste. DOE believes that these most stringent standards should be removed as management options from the Guide. At the very least, if these options are retained in the Guide, EPA should clearly indicate the such options should only be applied when it is clear that these wastes may pose a substantial hazard to human health and the environment if there is a release. EPA should further suggest in the Guide, that the facility in question should notify their regulator promptly if it is determined that "industrial waste" warrant such controls. In this case, the regulator (Federal or state level) should take action to modify existing regulations under the RCRA Subtitle C program, to bring such wastes into the hazardous waste system. DOE believes that such wastes should not be left to a voluntary system of waste management and should not be addressed under the auspices of the Guide.

2) The Guide should provide a clear statement of policy regarding the RCRA Subtitle C/Subtitle D interface.

DOE believes that the Guide should discuss the interface between Subtitle C (hazardous waste) and Subtitle D (nonhazardous "solid" waste). As indicated in the above comment, the Guide seems to extend many concepts and even requirements of the hazardous waste program into the industrial (nonhazardous) waste management program. For example, recommended provisions for corrective action, and closure and post closure, seem very similar to the RCRA Subtitle C provisions for these activities. Indeed, the Guide refers

the user to guidance documents prepared under Subtitle C to guide decision making in the industrial waste program. Also, the transition between Subtitle D (e.g., no liner, single liner, or composite liner) and Subtitle C (e.g., double liners) for landfills seems to hinge on whether, and if so, by how much, a waste concentration exceeds a health-based number (HBN) or maximum contaminant level (MCL), both of which are used in the RCRA Subtitle C program to identify hazardous wastes. The Guide provides neither a link nor a clean break between the two systems. DOE suggests that EPA address this interface in the Guide so that site managers will be able to understand the differences between the two programs and how they will affect design and operation of waste management systems.

3) The Guide should apply different standards than those used to regulate hazardous waste.

The Department agrees with one of the basic premises for the Guide, specifically, that management standards be based on risk posed by the waste. Quantitative risk assessment inherently requires that some type of level be established above which some type of specific action is taken. Consequently, EPA has established, as part of the Guide, quantitative health-based reference levels for nearly 200 hazardous constituents. It seems though, that the same criteria and assumptions used to derive these levels for hazardous waste, are applied in the Guide to industrial, presumably nonhazardous wastes. DOE questions whether, and considering that we are (presumably) not dealing with RCRA hazardous wastes (or solid wastes that should be hazardous wastes), it is appropriate to apply these same standards to what should be a distinctly different category of waste. DOE recommends that EPA consider whether different assumptions (e.g., exposure) should be used in the derivation of the levels for quantitative risk assessment of industrial wastes.

In a related context, many industrial wastes will invariably contain one or more hazardous constituents, but may pose somewhat of a health risk or be of concern for other reasons as well. Food industry wastes, for example may need to be controlled for their pathogen content or their ability to promote the growth of pathogens. Some food wastes may also warrant controls for their excessive nutrient content (e.g., phosphorus, nitrogen). Impacts from these wastes on surface waters are well documented. As another example, oily wastes may need to be controlled solely because of their oil (non aqueous phase liquid) content. Wastes with excessive salt concentrations are another example. Cases where the oil or salt content of wastes have contaminated ground-water are also well documented. While the presence of oil or salts in ground-water may not be associated with a serious health effect, contamination nevertheless renders the ground-water unusable for certain purposes. Many U.S. dollars are spent cleaning up ground-water that is contaminated with these relatively nonhazardous waste components. While the focus of the Guide is clearly on the constituent content of wastes, DOE believes that EPA should consider other waste properties.

4) The four underlying principles established for the Guide should be tailored to the minimal hazards posed by industrial nonhazardous wastes, and further, the Guide should adhere more closely to the four underlying principles.

In the FRN announcing the release of the Guide and in the introduction to the Guide (p. vii, Introduction), EPA indicates that the guidance reflects four underlying principles. These principles adopt a multimedia approach to protect human health and the environment; tailor the management practices to the risks posed by the waste and the location of the unit; affirm state and tribal leadership; and foster a partnership among the public, facility managers, and regulatory agencies. DOE finds these to be worthy and credible goals, however, these goals are not tailored to the minimal hazards posed by industrial nonhazardous wastes. In addition, the Department is concerned that the guidance itself only minimally reflects these goals. The following examples illustrate these concerns:

Multimedia approaches to protecting human health and the environment. While EPA considers various media (air, surface water, and ground-water) subject to a potential release of toxic substances, the Guide provides little if any discussion of how releases to these media can interact, thereby producing cross-media impacts. Further, it tends to focus on health impacts, with little attention paid to ecological impacts. More importantly, DOE is concerned that EPA is not reflecting the trend toward integrated risk assessment endorsed by many organizations and illustrated by the Science Advisory Board (SAB) in its recent report, "Integrated Environmental Decision-making in the Twenty-first Century: Summary Recommendations."[1] While the Guide acknowledges the existence of multimedia approaches, it tends to treat the various media separately, and it does not consider nor provide for future consideration of an environment characterized by multiple stressors acting simultaneously on receptors. DOE is concerned that the Guide, which purports to be risk- and multimedia-based, does not reflect this risk-based approach. DOE is not suggesting that the Guide necessarily blaze the trail for multimedia approaches, but that it at least acknowledge the importance of such approaches and allow for the integration of such approaches over time.

Tailoring management practices to risk. DOE generally favors risk-based management practices, and prefers an industrial waste management program that tailors requirements to the site-specific risks. However, while the Guide touts a risk-based approach, the concept of linking management practices to risk seems to only occur with respect to the air and ground-water pathways, and within these, actual consideration is limited. For the air pathway, the risk model provides only conservative representations of volatile organic compound (VOC) inhalation risk associated with waste management units [Chapter 5, p. 24 (or p. 5-24)]. If air

[1] EPA Science Advisory Board, EPA-SAB-EC-99, draft report, May 1999.

modeling indicates that VOC emissions are a concern, the Guide suggests reducing risk through pollution prevention and, if necessary, treatment of captured VOCs. However, it fails to link the degree of risk with the mitigating measure. (See discussion in detailed comments for further concerns about the model used to evaluate air quality risks.) For the ground-water pathway, a risk-tiering approach is used, but only with respect to liner selection. Risk is not used in the Guide for other important aspects of industrial nonhazardous waste management such as operational requirements, monitoring requirements, run-on and run-off controls, or closure and post closure care. Further, while EPA presents a clear and concise description of the risk assessment process, it fails to follow thorough with this process in the risk tiering approach. For example, there is little if any consideration of exposure assessment, other than recommending standard exposure factors. Also, the modeling seems to assume that exposure will occur at the monitoring well, which, by default, is assumed to be located 150 meters from the unit. The risk tiering approach in Tier 2 allows the user to input alternative distances, but only to a maximum of 500 meters. For on-site DOE industrial waste management facilities, this distance may be unrealistically short, and the likelihood of residential exposure -- the assumed exposure embedded in the leachate concentration threshold values (LCTVs), which are based on maximum contaminant levels (MCLs) or HBNs -- is limited.

Foster a partnership. DOE agrees with EPA's recognition of the importance of building partnerships. Public involvement constitutes an important factor for evaluating the risk posed by the waste. Despite EPA's strategic positioning of its partnership discussion of at the beginning of the document, DOE is concerned about the actual recommended implementation steps. For example, on page 1-4, EPA states that, prior to a meeting with industry, community, and state representatives, the facility operator "should develop a waste management plan for the facility or come to the meeting prepared to describe how the industrial waste from the facility will be managed." On the basis of previous experience in working with the public, DOE has found that inviting stakeholders to a meeting to present an already-developed plan may be too late. Similarly, other EPA offices have found that citizens want to be involved much earlier in the planning process, and that such early involvement can reduce the potential for future problems. For example, according to the Draft Resource Guide to Constructive Engagement, which grew out of EPA's Common Sense Initiative's Subcommittee on the Computer and Electronics Sector, "ideally the time to initiate constructive engagement is before any major incident. . . .Constructive engagement efforts are often initiated after some public controversy about facility activities. In such cases, it is often necessary to spend considerable effort to repair relations in

addition to resolving the specific issues involved."[2] DOE is also concerned that while EPA presents a generally good discussion of public participation at the beginning of the Guide, it seems to never refer back to it or provide examples of how public participation should be integrated with the rest of the planning and design processes. For example, DOE is particularly concerned that EPA appears to have ignored a very important aspect of public participation in risk assessment, relating, again, to exposure assessment. Often, the local community is the best source of information for identifying potential exposure routes and pathways. As noted above, EPA seems to ignore the component of exposure in its risk assessments as well as potentially valuable information sources pertaining to this approach.

Affirm state and tribal leadership. DOE agrees that state and tribal regulations and policies should be of high priority, because states and tribes are usually familiar with the site-specific conditions of a facility. DOE also notes in this context that EPA, in many cases, states that facility managers should consult with state regulations (e.g., regarding legal requirements or preferences before beginning sampling efforts, (p. 5-2); regarding air quality models for site-specific analyses, (p. 5-25). The Agency also indicates that in a Tier 1 analysis, facility managers should check with the state to determine whether HBNs or MCLs should be used. However, in many more cases, EPA refers minimally, if at all, to state regulations, policies or plans (e.g., with respect to waste management systems operations, monitoring, corrective action, and closure.)

5) The controls identified in the Guide to protect all media should be based on risk.

As indicated above, the Department agrees with the Guide's premise that management standards be commensurate with the risk posed by the waste. However, DOE believes that the controls specified in the Guide for the protection of surface water and air are not based on risk. Instead, the Guide presents measures that are identified as Best Management Practices (BMPs). BMPs are recommended independent from the risk posed by the waste. DOE believes that all management controls, including BMPs, should be based on the risk posed by the waste. The Department therefore recommends that all management controls for industrial wastes be established on the basis of risk.

6) The Guide should be modified to clearly define the breadth of term "industrial waste." The Guide should identify the types of wastes that are within the definition and those that fall outside the term.

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[2] EPA, CSI Subcommittee on Computers and Electronics, *Constructive Engagement Resource Guide*, Draft 3, November 16, 1998, p. 5-2.

In the introduction to the Guide (Introduction, p. viii), EPA describes the scope of the guidance, stating that it is "useful for a broad array of industrial process wastes, especially those that are managed at the industrial facilities where they are generated." The Guide only specifically excludes "certain extractive wastes, such as from mining or oil and gas production" and wastes managed at municipal solid waste landfills (MSWLFS). This leaves several waste types, which the DOE generates, that are neither specifically included nor excluded by the Guide.

A clear definition of the term "industrial waste" is needed for the Guide. Under 40 CFR Part 261, EPA established complex definitions for solid and hazardous waste. In essence, the universe of wastes subject to RCRA control (under RCRA Subtitle C or D) is termed "solid waste." A subset of solid waste is then defined as "hazardous waste." The Guide establishes the new term of "industrial waste." Since the Guide pertains to wastes that are not defined as hazardous waste under Part 261, one would conclude that industrial waste are solid wastes that do not fall into the hazardous waste category. The Guide should clarify its definition of industrial waste.

Further, DOE recommends that some types of waste that could be defined as industrial waste should not be covered by the guidance. The introduction to the Guide (Section II) indicates that the Guide does not cover wastes from mining or oil and gas production. It also states that units that receive municipal solid waste are not addressed. As the user progresses through the Guide, other types of wastes or management units are similarly not within the purview of the Guide. DOE recommends that the Guide clearly identify up front those wastes or management practices that it does not address.

The following wastes should not be covered by the Guide:

- Mining waste
- Oil and gas production waste
- Radioactive waste (See related comment below)
- Construction and demolition waste
- Naturally occurring radioactive material (NORM)
- Wastes containing polychlorinated biphenyls (PCBs)
- Remediation waste, including contaminated media

Units or management practices that should not be addressed by the Guide are:

- Underground injection control waste (See related comment below)
- Municipal landfills regulated under 40 CFR Part 258
- Waste storage units
- Waste treatment units other than land application

7) The Guide should clearly identify radioactive wastes as not addressed by the Guide.

DOE's facilities generate a variety of waste types in the process of carrying-out their missions. These waste types may be classified into several categories: radioactive wastes; mixed hazardous and radioactive wastes; and nonradioactive/nonhazardous waste. While DOE believes that its nonradioactive/nonhazardous wastes would be covered under the Guide, the departments' radioactive wastes, which could be defined as industrial wastes, should not be covered under the Guide. Radioactive wastes are regulated under the Atomic Energy Act and through a series of Departmental Orders. The Department strongly urges EPA to explicitly identify radioactive wastes as being excluded from coverage under the Guide.

8) EPA should consider identifying industrial wastes that are managed in deep well injection units as not addressed by the Guide. Alternatively, EPA might consider developing specific standards for these types of units as part of the Guide.

Deep well injection is a waste disposal practice regulated under the Underground Injection Control (UIC) program of the Safe Drinking Water Act. There are several classes of deep wells used for waste disposal, including those for disposal of hazardous waste and those for disposal of wastes that are not hazardous. Deep well injection is a special type of waste disposal where conventional types of controls used to protect human health and the environment for other units (e.g., run-off controls, liners, leachate collection systems, etc.) are unnecessary. DOE requests that EPA specifically identify deep well injection as a waste disposal practice that is not covered under the Guide. However, since certain nonhazardous solid wastes are deep well injected, EPA might want to consider expanding the Guide to encompass deep well injection.

9) Waste volume and frequency of generation should be included as a primary factor for determining the risk posed by the waste.

The Guide omits waste volume from the equation for determining overall risk. A similar observation applies to the frequency of generation. It seems that even if a small volume waste, or a waste that is infrequently generated, contains significant amounts of hazardous constituents or presents other undesirable characteristics, it nevertheless still represents a relatively low risk. DOE urges EPA to alter the Guide and discuss how waste volume and generation frequency would impact the determination of risk.

10) The Guide should include specific guidance on selection and use of leaching tests.

Application of leaching tests and measurement of constituents within the simulated leachate is used as a primary input to models used to determine risk to ground-water, and ultimately, for selection of the appropriate type of leaching controls (e.g., liner type, leachate detection, leachate collection). This is an extremely important input parameter with direct consequences as to type of control and level of protection that is afforded to

human health and the environment. DOE therefore believes that the selection and use of the leaching test is of paramount importance. The Guide currently identifies a number of alternative leaching methods that may be applied, including the Toxicity Characteristic leaching Procedure (TCLP), but does not discuss which test should be applied, or even present criteria upon which to base selection of a test. DOE believes that this lack of attention to this most important parameter represents the weakest link in the chain. In consideration, DOE recommends that EPA explicitly identify and recommend certain types of leaching tests, or specify criteria for selection of leaching tests for specific applications (e.g., based on unit type, waste type, environmental setting).

11) The Guide should not offer the TCLP as one of the leaching tests that may be applied as input to modeling and the determination of management controls.

As indicated above, the Guide mentions the TCLP as one of the leaching tests that may be applied as input to the ground-water methods and the determination of the appropriate type of ground-water protection controls. While it is important to mention the TCLP, considering its current use under the RCRA Subtitle C program, DOE believes that it is inappropriate to recommend or even imply that this test may be acceptable for estimating leachate composition for the intended application. This test was explicitly developed for use in the RCRA Toxicity Characteristic as a co-disposal model for leaching in a municipal landfill (40 CFR Part 261.24). Because municipal landfills are identified as a type of unit that is not covered under the guidance, DOE believes that it would be inappropriate to use this test to determine controls for industrial wastes. DOE notes that EPA's own Science Advisory Board (SAB) voiced a number of concerns over misuse of the TCLP[3], including its use for estimating site-specific leaching potential, and that EPA has embarked on a program to re-examine the TCLP and its uses.[4] In consideration, DOE recommends that the Guide be revised to indicate that the TCLP should not be applied as a determination of leaching potential for industrial wastes.

On a related note, DOE notes that the Guide often misapplies the term leachate. First, the Guide often uses the term "waste" when what is really being referred to is the extract or simulated leachate developed from application of a leaching test on a waste. Secondly, the term "leachate" should not be used to refer to both the real leachate that emanates from a land disposal unit, as well as the extract or simulated leachate that is produced from application of a leaching test. DOE recommends that EPA differentiate these terms by referring to the liquid generated from application of a leaching test as "simulated leachate" or "extract."

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[3] EPA Science Advisory Board Commentary, October 1991 and EPA Science Advisory Board Letter to Carol M. Browner, Administrator, November 1, 1998.

[4] EPA Public Meeting on Development of New Waste Leaching Procedures Under the RCRA Program, July 22-23, 1999, Washington DC.

12) The Guide should provide for a pre-screen to identify industrial waste that may warrant only minimum management controls.

The Department welcomes the three tiered system established in the Guide for determining potential risk and identifying management controls. DOE believes it is appropriate to tailor the stringency of facility assessments according to facility-specific considerations. However, DOE notes that even the most basic assessment may require substantive waste testing and analysis, which, especially in the case of heterogeneous wastes, may prove costly. DOE believes that industrial wastes will ultimately require minimal controls to protect human health and the environment. For example, construction and demolition debris can be extremely heterogeneous, and at the same time, will typically pose minimal, if any, risk to human health or the environment. In consideration, DOE recommends that EPA establish a simple pre-screen that will identify wastes warranting only minimal controls. Such a pre-screen could involve factors including waste volume or frequency of generation (See comment above), for example, and would also employ process knowledge in lieu of testing.

13) The Guide should verify and justify the models underlying its proposals.

The risk tiering system relies on models to determine the most appropriate liner type, based on the concentrations of waste constituents in simulated leachate. Because the type of liner can significantly affect design and construction costs, these models may have significant cost implications. DOE has not reviewed any of the models in detail, relying instead on the peer reviews being supported by EPA. However, DOE suggests that EPA include some results of field testing or comparisons with other models to provide the user with confidence that the models provide reasonable representations of real-world conditions. Just as EPA suggested that alternatives for site-specific air quality risk models be verified against analytical solutions, other models, and/or field data (p. 5-25), DOE would welcome similar findings of "groundtruthing" demonstrated in the models EPA relies on in the Guide. In this context, the Department notes that the SAB favorably reviewed the Composite Model for Leachate Migration with Transformation Products (EPACMTP) in 1995 (p. 7A-13). However, also in 1995, the SAB recommended that EPA, through further testing, verify the proper functioning of the EPACMTP software, and that EPA document known instances where biodegradation or inhibiting factors may affect the transformation rate of daughter products from parent chemicals (i.e., exposure may be overestimated by the model). The SAB also stated that it was "important that all options offered by EPACMTP are tested to verify that they perform properly before the model is released."[5] DOE suggests that EPA add language to the Guide confirming that the SAB recommendations were implemented and add information demonstrating the model's predictive capabilities.

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[5] SAB, "An SAB Report: Review of EPA's Composite Model for Leachate Migration with Transformation Products – EPACMTP, EPA-SAB-EEC-95-010, August.

14) Some of the provisions of the Guide may be unnecessary and overly burdensome for most categories of industrial waste.

The Guide recommends a number of activities for nonhazardous industrial solid waste. A cursory comparison of these activities with those currently required for MSWLFS (as described in 40 CFR Part 258) indicates that the recommended actions may be significantly more burdensome than those described for MSWLFS. Categories of these more burdensome actions include public participation, waste characterization, site characterization, air quality protection, surface water protection, ground-water protection, management and operations, monitoring performance, corrective action, and closure and post closure. A specific example of such differences pertains to recordkeeping. EPA's regulations for municipal solid waste landfills includes recordkeeping for monitoring activities; types and quantities of waste received; vector, dust and litter control efforts; and environmental impacts with regard to gas and leachate control.

In contrast, the Guide identifies 20 individual types of operational records that should be maintained, including (but not limited to) liner compatibility testing; inspection reports, including photographs; design documents, including drawings and certifications; daily log of activities; calendar of events; and occupational safety records, including safety training and safety surveys. More generally, it appears that with the exception of requiring treatment of wastes that exceed a certain toxicity level, the recommendations of the Guide would be very close to the requirements of RCRA Subtitle C for some categories of industrial waste (as indicated previously) . DOE believes that these extensive controls, if at all, are warranted only for a very small subset of industrial waste. In consideration, DOE recommends that identification of various provisions should be accompanied by qualifiers that describe under what conditions these provisions should be appropriate.

15) The Guide identifies a number of reference documents that pertain to the hazardous waste program. Many of the processes and procedures contained in these reference materials are inappropriate for the management of nonhazardous waste.

DOE commends EPA in that the Guide presents a wealth of information with regard to many different areas associated with waste management. The Guide will serve as a valuable desk reference in this regard. However, many of the cited references, such as the EPA 1989 *Risk Assessment Guidance for Superfund,* specify process and procedures that apply to hazardous waste. Applying these same processes and procedures to industrial waste would in most cases involve a significant expenditure of resources that is simply unwarranted for nonhazardous waste. DOE recognizes that most of the available reference information that could be cited will have been developed for the hazardous waste program, but is nevertheless concerned over misapplication of the processes and procedures identified in these documents. DOE recommends that footnotes or other

statements be inserted into the guide, as appropriate, that recommend tailored approaches for nonhazardous waste.

16) The assessment of risk and management controls for industrial waste seems to focus on human health concerns and omit environmental protection.

As indicated previously, the assessment of risk and management controls for the industrial waste seems to focus on human health concerns, rather that environmental health. DOE agrees that because the document focuses on nonhazardous industrial waste, risk should be based primarily on human health. However, additional leeway for addressing environmental risk, when warranted, should be provided within the guidance, and EPA should include appropriate guidance to the users.

SPECIFIC COMMENTS

1) Document Title Page (Front Cover)

Document Title Page -- The title of the Guide is "Guide for Industrial Waste Management."

From the document cover, one would conclude that the Guide is "in-place" and operational. Only until you begin reading do you realize that the guidance is in draft and totally voluntary. Even the Federal Register Notice title *(Voluntary Guide for Industrial Waste Management*) indicates that the Guide is voluntary. The document title should clearly indicate that the document is in draft form and that compliance with its provisions is voluntary.

2) Document Disclaimer (Introduction, p. ii), and FRN (Section I.E) Next Steps

Document Disclaimer and FRN (64 FR 31579) -- EPA indicates that it intends to release a final version of the Guide following review of comments.

Waste management is an ever-evolving field characterized by a continuous development of new practices, procedures and technologies. For example, in its draft report on integrated decision making, the SAB found that because our scientific capability is increasing at a rapid rate, we can realistically expect to obtain the answers to increasingly complex questions regarding today's environmental problems. It cites a range of new techniques for gathering large amounts of data, remote sensing techniques, algorithms, and model constructs enabling the simulation of the complexity of human and ecological systems, among others, which will help generate the answers to questions regarding

chemical interactions and will help in the development, testing, and evaluation of risk reduction options.[6]

DOE is also concerned that the proposed process for selecting management designs (i.e. liners) is tied to modeling assumptions in specific EPA models (e.g., EPA's composite model for leachate migration with transformation products, EPACMTP) and assumptions regarding leachate concentration threshold values (LCTVs), that are tied to health based numbers in a rule that has not been promulgated (i.e., the Hazardous Waste Identification Rule for Process Wastes). The Department questions how new scientific information will be incorporated into the process described in the Guide. EPA states, "to keep the software developed for this guidance up to date and to accommodate concerns at levels different from the current toxicity reference levels (TRLs), the TRL value can be modified by the user of the software" (p. 7A-7). However, DOE is concerned that such an approach places the burden of incorporating new knowledge on the user, when the burden should be on EPA. DOE suggests that EPA describe the approaches it will take to ensure that the guidance reflects the most up-to-date information.

In light of the above, DOE recommends that the guidance serve as a "living document" and that regularly updated editions be provided as appropriate. The Department believes that the next version of the document should not be labeled "final."

3) <u>FRN (Section II.D)</u> - Protecting Ground-Water

<u>FRN (64 FR 31582)</u> -- EPA indicates that the RCRA hazardous waste program addresses the uncertainties associated with hazardous waste disposal by requiring waste treatment prior to disposal. EPA solicits input for overcoming similar issues involved with the management of industrial wastes.

EPA offers several suggestions, including "quality assurance and control, long-term ground-water monitoring and corrective actions." The Guide is unclear as to how these elements address uncertainty. EPA further states that waste treatment could be considered, and, where the uncertainties involved with a waste are too great, the Agency could elect to bring this waste under the hazardous waste program through listing the waste as hazardous. As previously indicated (General Comment #1), DOE believes that if a waste poses enough of a risk to warrant treatment and other substantive controls, then it should be regulated as a hazardous waste. The Guide should be reserved for industrial nonhazardous wastes.

4) <u>Document, Chapter 2 - Characterizing Waste, General</u>

[6] EPA Science Advisory Board, EPA-SAB-EC-99, draft report, May 1999, p. 14.

<u>Chapter 2 (p. 2-1)</u> -- The Guide states that "knowledge of the physical and chemical properties of the waste is crucial in identifying waste reduction opportunities. It is necessary in gauging what risks a waste may pose to surface water, ground-water, and air. It drives the selection of a liner or the choice of land application methods. It is needed to determine which constituents to test for if conducting ground-water monitoring. Use knowledge of waste generation processes, analytical testing, or some combination of the two to estimate waste constituent concentrations."

DOE recognizes that solid waste generators are required to determine whether their solid wastes are hazardous. However, this assessment is quite narrow; the determination rests on whether the waste is either listed as hazardous or whether it exhibits any of the four hazardous waste characteristics. DOE anticipates that certain information with respect to industrial wastes may be available because of the requirement to evaluate solid wastes to determine if they are hazardous.. However, the Department is concerned because the Guide calls for additional waste characterization activities (e.g., obtaining constituent-specific information, applying a leaching test), it that may represent a significant new burdens. In light of the nonhazardous character of the majority of wastes that would be covered under the Guide, DOE believes that these additional burdens are disproportionate with the risks posed by these wastes. DOE urges EPA to stress the importance of acceptable process knowledge for waste characterization, especially when the waste is anticipated to pose minimal risk to human health and the environment. As indicated previously (General Comment #12), DOE recommends that EPA establish a pre-screen, as part of the Guide, that can be used to quickly identify wastes that pose minimal hazard and warrant minimal controls.

5) <u>Document Chapter 2, Section I - Characterizing Waste, Process Knowledge</u>

<u>Chapter 2, Section I (p. 2-1)</u> - "A waste characterization begins with an understanding of the industrial processes that generate a waste."

DOE would like to offer two comments with respect to process knowledge. Most important, DOE believes that, in may cases, process knowledge will suffice to determine waste characteristics and content, as indicated above. The wealth of existing data pertaining to most categories of industrial wastes will surely facilitate the application of knowledge in lieu of testing. Moreover, as indicated above, solid waste generators are required, under RCRA Subtitle C, to determine whether their solid wastes are hazardous wastes. This determination will have been made for most of the industrial wastes covered under the Guide. DOE therefore believes that many facilities will be able to use process knowledge in lieu of testing for purposes of the Guide. The document should stress use of process knowledge as an acceptable alternative to waste sampling and analysis. The Guide should confine waste sampling and analyses only to cases in which the existing information does not suffice to reliably estimate waste properties.

DOE also recommends that the term "process knowledge," be replaced by "acceptable knowledge." "Acceptable knowledge" is a more appropriate term because it may also include information not directly related to the process that resulted in the generation of the waste. EPA itself has begun to use the "acceptable knowledge" for the hazardous waste program. This term should similarly be used for the Guide.

6) <u>Document Chapter 2, Section II.A.1 - Representative Waste Sampling</u>

<u>Chapter 2 (p. 2-4)</u> -- This section of the Guide provides guidance for representative waste sampling. It addresses sampling existing surface impoundments and landfills using intrusive methods (e.g., using hollow-stem augers and split-spoon samplers).

Since this Guide is directed at new waste management units, it is unclear why it would be necessary to sample existing units. Furthermore, DOE believes that intrusive sampling in existing land-based units may be dangerous because it could create a pathway for accelerated leaching and ground-water contamination. As a minimum, the Guide should clarify the dangers involved with intrusive sampling and that this activity should only be conducted as a last recourse to obtain needed and otherwise unavailable data and information. The Guide should provide alternative sources of information.

7) <u>Document Chapter 2, Section II.B - Leachate Test Selection</u>

<u>Chapter 2 (p. 2-6)</u> -- The Guide currently indicates that the test should be selected based on the physical state of the waste and the environment in which the waste will be placed.

As indicated in the general comments above (General Comment #10 and 11), DOE recommends that EPA include additional guidance on leaching test selection. Further, while DOE agrees that selection of the test should be conducted in consultation with the regulator, DOE does not believe that all state regulators will have the appropriate technical expertise for selection of leaching tests. Additional and substantive criteria for leaching test selection should be provided in the Guide.

With respect to the leaching tests discussed, DOE notes that the EPA Synthetic Precipitation Leaching Procedure (SPLP) is not widely used. In addition, while the simulated acid rain leaching fluid used in the SPLP may have some effects on inorganic constituents, it will have very limited effects on leaching of organics. A simple water-based leaching fluid would be quite satisfactory for wastes containing organic constituents only.

In addition, the Multiple Extraction Procedure (MEP) is touted as having an advantage (over the TCLP and presumably the SPLP) because it gradually removes excess alkalinity in a waste. In general, this "advantage" would not effect leaching of organic constituents. More important, in arid climates, there may be insufficient percolation through the

landfill to cause significant leaching and removal of the alkaline component of wastes. In other climates, landfill covers will also inhibit leaching. The MEP is not an appropriate test under these conditions. The MEP is a worst-case leaching test used in delisting. The purpose of the application of the MEP in delisting is to assess whether a listed hazardous waste can be considered nonhazardous under worst case conditions and extended leaching timeframes. In this application, the MEP is designed as a very stringent test. DOE does not view the MEP as offering an advantage that is pertinent to nonhazardous industrial waste. DOE believes that this test is inappropriate for nonhazardous industrial waste and recommends that it be removed from the Guide.

8) Document Chapter 2, Section III - Volatile Organic Emissions

Chapter 2 (p. 2-10) -- This section of the Guide recommends the use of quantitative analytical methods to determine the concentration of volatile organic constituents, unless the concentrations can be estimated through process knowledge.

DOE agrees with the proposition that process knowledge should be applied initially to determine the presence and approximate concentration of constituents. However, if waste analyses appear to be necessary, DOE recommends that screening tests for the presence of volatiles be employed first. In most cases, DOE believes that quantitative analyses will be unnecessary.

9) Document Chapter 3, General - Integrating Pollution Prevention, Recycling and Treatment

Chapter 3 (p. 3-1) -- The document recommend consideration of Pollution Prevention, Recycling and Treatment when designing a waste management system.

DOE strongly supports pollution prevention and recycling. However, DOE believes that waste treatment is in a different category altogether. Waste treatment should not be lumped in with pollution prevention and recycling. Waste treatment should only be performed when necessary to reduce risk to acceptable levels. As indicated in the general comments above (General Comment #1), DOE believes that if a waste poses enough of a risk to require waste treatment to reduce that risk to acceptable levels, then the waste should be considered for regulation under the hazardous waste program. While waste treatment is an important consideration for hazardous waste, it should not be necessary for the vast majority of nonhazardous industrial waste.

10) <u>Document Chapter 5, Section I.E - Federal Airborne Emissions for Solid Waste Management Activities</u>

<u>Chapter 5 (p. 5-9)</u> -- This section of the Guide outlines standards for hazardous waste management units and MSWLFs. The Guide indicates that these standards may serve as a guide for establishing standards for industrial waste.

While these standards may be appropriate for hazardous wastes and for MSWLFs, in most cases they will not be necessary for the management of industrial nonhazardous wastes.

11) <u>Document Chapter 5, Section II - Assessing Risks</u>

<u>Chapter 5 (p. 5-24)</u> -- EPA indicates that the model may overestimate emissions because competing mechanisms including runoff, erosion, and leaching are not accounted for in the model. EPA further explains that the model does not account for control technologies such as covers that might influence the degree of volatilization. Moreover, according to EPA, the model may not be useful for facilities located in areas of intermediate or complex terrain. Also, the model cannot evaluate receptors that are further than 1000 meters from the unit.

DOE agrees with the concept of tailoring waste management practices to air quality risks. It also supports the use of risk models that allow for user input of site-specific data, as the Industrial Waste Air Model (IWAIR) does. However, DOE is concerned about the limitations of the IWAIR noted by EPA in the Guide. Since many potential human receptors would be positioned more than 1000 meters from waste management units at DOE facilities, DOE is concerned that the IWAIR model may not be appropriate for DOE sites. DOE asks that EPA clarify the implications of this 1000-meter limit. For example, does the 1000-meter limitation mean that for potential receptors greater than 1000 meters a site-specific risk assessment would need to be conducted? Or, does EPA assume that airborne releases would pose no significant risk to potential receptors greater than 1000 meters from the waste unit, in which case, no additional controls would need to be implemented?

In light of EPA's finding of IWAIR limitations, the Guide indicates that it may be necessary to develop site-specific emission estimates and to conduct site-specific risk assessments. However, since the Guide addresses industrial nonhazardous waste, DOE believes that in the majority of cases, site-specific evaluations should not be necessary. DOE recommends that the Guide should emphasize that site-specific determinations are only needed in rare cases.

12) <u>Document Chapter 5, Section III - Emission Control Techniques</u>

<u>Chapter 5 (p. 5-25)</u> -- The Guide outlines very stringent emissions controls.

Since the Guide addresses industrial nonhazardous waste, DOE believes that, in most cases, these controls will be disproportionate to the actual risk posed by these wastes. In this context, DOE notes that EPA does not model potential risks attributable to particulate releases, but instead recommends that facilities "adopt controls to minimize particulate emissions" (p. 5-1.) Because many of the recommendations regarding particulate emissions controls are potentially costly (e.g.,using "dedicated" equipment, capturing and properly handling wash water, constructing temporary roadways), DOE recommends that unit design and operational practices should be tailored to risks due to particulate emissions.

13) <u>Document Chapter 6, Section III - Protecting Surface Water</u>

<u>Chapter 6 (p. 6-1)</u> -- For surface water, the Guide describes federal surface-water protection programs and a range of BMPs, including flow diversion practices, exposure minimization practices, sediment and erosion prevention, infiltration practices, and sampling and analyzing runoff.

DOE is concerned that this chapter also does not provide for consideration of risk. Because many DOE facilities may be remote from potential surface water receptors, and the cost of implementing many of the recommended practices (e.g., streambank stabilization, preventative monitoring) could be significant, DOE suggests that EPA consider using a risk-based approach for identifying surface-water controls. Overall, DOE again notes that the Guide recommends disproportionate, hazardous waste-like controls for industrial nonhazardous waste.

14) <u>Document Chapter 7, Section II.B - Risk Characterization: The 3-Tiered Approach</u>

<u>Chapter 7 (p. 7A-13)</u> – EPA discusses the concept of a buffer zone.

DOE supports the concept of a buffer zone for waste management units. However, an across-the-board zone of 150 meters may be unnecessary for some types of wastes and waste management units. For example, some units are intended to serve as permanent disposal units (e.g., landfill) whereas other units may have a more temporary status (waste piles and land treatment units). A smaller buffer zone may be acceptable for temporary units. DOE believes that the identification of a buffer zone should be waste- and unit-specific. EPA should provide criteria for identifying a buffer zone instead of establishing a particular value. The criteria should be based on risk.

DOE notes that different rationales for the 150 foot buffer are provided in different sections of the Guide. While the section of the guide referenced above indicates that the

150 meters was identified to be consistent with some State management programs, Chapter 9, Monitoring Performance, explains that the 150 meter buffer was established to reflect the MSWLF standards codified at 40 CFR Part 258.

15) <u>Document Chapter 7, Section II.B - Risk Characterization: The 3-Tiered Approach, EPA's Composite Model for Leachate Migration with Transformation Products.</u>

<u>Chapter 7 (p. 7A-13)</u> -- The EPA model used for determining fate and transport in the subsurface, the Composite Model for Leachate Migration with Transformation Products (EPACMTP), accounts for the transformation and the fate and transport of transformation products.

The main improvement of this model over its predecessors lies in its ability to address transformation products. DOE believes that this is a significant accomplishment and would welcome further detail in the Guide. The reader should not be directed to a background document.

16) <u>Document Chapter 7, Section II.B - Risk Characterization: The 3-Tiered Approach, Leachate Concentration Threshold Values.</u>

<u>Chapter 7 (p. 7A-14)</u> -- The Tier 1 modeling assessment calculates values reflecting the concentrations in simulated leachate for a number of constituents. These values are provided in a lookup table.

DOE anticipates that the models used to calculate these values are similar, if not identical, to those supporting the development of the Hazardous Waste Identification Rule (HWIR) for Process Waste. However, some of the assumptions underlying the two sets of models, may differ. The relationship between the values presented in the Guide and the HWIR for Process Waste is very important, because the difference between these numbers will define the "regulatory" differentiation between hazardous and nonhazardous waste. DOE therefore believes that the models and calculated values presented in the Guide need to be compared to the HWIR models and values. DOE recommends that EPA delay finalizing the Guide until the HWIR models and values can be released for comment.

17) <u>Document Chapter 7, Section II.B - Risk Characterization: The 3-Tiered Approach, Tier 2: Location Adjusted Evaluation</u>

<u>Chapter 7 (p. 7A-18)</u> -- EPA asks for comment and suggestions for addressing the inclusion of the composite liner scenario.

The Tier 2 Location-Adjusted evaluation does not explicitly address the composite liner scenario because of modeling difficulties. DOE recommends that the modeling approach for Tier 2 be either completed prior to finalizing the Guide or dropped in its entirety.

18) <u>Document Chapter 7, Section A - Protecting Ground-Water - Assessing Risk</u>

<u>Chapter 7 (p. 7A-19)</u> -- The Guide indicates that "in developing and training the neural networks, problems were encountered when the extremes of the distributions were used as input to the training."

As noted in the beginning of the Guide, EPA focuses its recommendations on the design of new systems. First. DOE suggests that EPA clarify in this section of the Guide that it is not recommending any changes to existing industrial solid management units.

In addition, the Guide addresses the use of neural networks to estimate dilution attenuation factors (DAFs), which are then used to calculate LTCVs, and ultimately to recommend a liner for various unit types. DOE is concerned about the validity of the neural network results if and when users specify values that are outside the 10th to 90th percentile range. According to EPA's explanation, it appears that the neural networks may not provide reasonable DAFs if, for example, the unit area is less than 980 square meters or if the distance to the well is more than 350 meters (see Table 4-2, p. 21, in the Users Guide for the IWEM.) Such constraints may limit the use of the neural networks for DOE landfills, which may be smaller than 980 square meters or greater than 350 meters from the exposure point.

DOE also notes that the discussion in page 7A-19 is confusing. Here (second full paragraph), EPA says, "the composite liner infiltration rate assumed in Tier 1 (3 x 10-5 for land fills) was outside the 10th to 90th percentile range (0.024 to 0.45 meters/year for landfills), and thus the neural networks were not trained using this value. Because the use of infiltration rates outside the range over which the neural networks are trained will result in significant error, the Tier 2 Location Adjusted Evaluation does not explicitly address the composite liner scenario." DOE suggests the EPA may have meant Tier 2 rather than Tier 1 in the first sentence. DOE is also concerned about the utility of a model that cannot be used to assess the composite liner scenario. (DOE also notes the significant discrepancy between the assumed infiltration rate for a composite liner (3 x 10-5) and the range used in the neural networks (0.024 to 0.45 meters/year).

19) <u>Document Chapter 7, Section B - Protecting Ground-Water - Designing and Installing Liners</u>

<u>Chapter 7 (p. 7B-1)</u> -- The Guide suggests three types of liner systems (no liner, single liner, and composite liner).

DOE suggests that EPA explain why it includes a section on double liners in this chapter. This appears to be the only reference to double liners in the document. Double liners are required for hazardous waste units. If EPA is suggesting the use of double liners for industrial nonhazardous waste, DOE suggests that EPA elaborate on this discussion.

Also, the discussion of leachate collection and removal systems appears to be somewhat prescriptive. On page 7B-26, EPA says, "Design a leachate collection and removal system to include the following elements: a low-permeability base, a high-permeability drainage layer, perforated leachate collection pipes, a protective filler layer, and a leachate removal system." DOE is concerned that such language is stronger than a recommendation, and that as such, it does not allow for site-specific risk considerations, incorporation of site-specific variables, or for technological developments that may simplify or otherwise improve cost-effective and efficient implementation. DOE suggests that EPA reword this section and provide for more flexibility in leachate collection and removal systems to account for site specificity, risk, and the future availability of new information.

20) <u>Document Chapter 8, Section I - An Effective Waste Management System</u>

<u>Chapter 8 (p. 8-1)</u> -- EPA indicates that "an effective waste management system involves operational procedures that seek to make continual improvements in waste management operations so that compliance with environmental laws is an ongoing accomplishment."

The Guide seems to link this statement to the ISO 14000 environmental management systems standards. However, the link between continual improvements and ongoing compliance is not demonstrated. DOE suggests that EPA reword this sentence to clarify the objective of continual improvements in waste management operations.

21) <u>Document Chapter 8, Section II - Operating the Waste Management System - Maintenance and Operation of Waste Management System Components</u>

<u>Chapter 8 (p. 8-2)</u> -- The Guide indicates that controls may include frequent inspections, routine maintenance, reporting of inspection results, and making of necessary improvements to keep the system operating.

DOE suggests that EPA clarify whether these recommendations apply to existing facilities as well as to-be-built facilities. Similarly, DOE suggests that EPA state who is responsible (e.g., state regulator, facility operator) for conducting the frequent inspections and other activities, as indicated.

22) <u>Document Chapter 8, Section III.A - Operating the Waste Management System - Operating Plan</u>

<u>Chapter 8 (p. 8-8)</u> -- A number of considerations are provided in the Guide (e.g., daily procedures component, lists of current equipment holdings and future equipment needs).

DOE is concerned that the operating plan suggested by EPA does not allow for flexibility regarding size and nature of the unit. The while perhaps appropriate for large waste management operations, these provisions may be less suitable for smaller waste management operations, such as those being conducted at some DOE facilities.

23) <u>Document Chapter 8, Section III.B - Operating the Waste Management System - Waste Analysis</u>

<u>Chapter 8 (p. 8-9)</u> -- Section B recommends a comprehensive waste analysis for determining waste characteristics.

DOE would urge EPA to revise this section of the Guide to reflect the previously provided guidance. For example, acceptable process knowledge can provide adequate data and information for most management applications. In this stage of the assessment process, adequate information should already be available with respect to waste content and characteristics. As a general matter, DOE notes that the latter sections of the Guide often ignore the guidance provided in the earlier sections of the Guide.

24) <u>Document Chapter 8, Section III.C - Operating the Waste Management System - Waste Inspections</u>

<u>Chapter 8 (p. 8-9)</u> -- Section C proposes screening or "fingerprint" analyses for waste inspections.

While DOE agrees with this aspect of the Guide, the Guide suggests that waste color, texture and odor can be used as indicators of the waste type. DOE also recommends that for waste inspections, EPA provide the flexibility suggested above for the operating plan, since, at many DOE facilities, the wastes do not vary in composition or source.

25) <u>Document Chapter 8, Section III.I - Operating the Waste Management System - Emergency Response Plan and Procedures</u>

<u>Chapter 8 (p. 8-16 and p. 8-18)</u> – The Guide indicates that a waste management system should include emergency response plans and procedures.

DOE recommends that EPA specifically allow for the incorporation of emergency response plans and procedures for on-site waste management units into existing facility-

wide emergency plans, because separate plans may be redundant and potentially conflicting.

DOE also suggests that the types of records to be maintained should relate to the potential risks at the site. For example, DOE questions the need to record items including the frequency of waste application and daily log of activities at small, on-site industrial waste management units.

26) <u>Document Chapter 9 - Monitoring Performance, General</u>

<u>Chapter 9 (p. 9-1)</u> -- the Guide states that "most industrial waste management units need to have a ground-water monitoring program."

This section of the Guide does not provide guidance on how to determine whether a monitoring program is required, nor does it suggest the use of any type of risk assessment to determine if a monitoring program is needed. Also, while DOE agrees that monitoring performance is important, it finds that the discussion is largely prescriptive, and in many ways mimics the monitoring requirements for hazardous waste management. DOE suggests EPA provide flexibility in monitoring requirements. DOE also suggests that the Guide provide some guidance regarding the extent of monitoring required in relationship to the potential site-specific risks presented by the unit. Further many DOE sites already have extensive ground-water monitoring systems, and DOE suggests the EPA provide for the integration of waste management ground-water monitoring requirements with other monitoring activities that may already be underway at a site.

27) <u>Document Chapter 9, Section I - Monitoring Performance - Ground-Water Monitoring</u>

<u>Chapter 9 (p. 9-2)</u> -- This section of the Guide describes the elements of a ground-water monitoring system. Section A recommends a complete hydrogeological characterization.

DOE supports the concept of hydrogeological characterization. DOE, however, suggests that EPA revise this section of the Guide to reflect the previously provided guidance. For example, in this stage of the assessment process, adequate information should already be available with respect to the hydrogeology of the site. In addition, DOE recommends that this section of the guidance should also account for the nature of the waste that is managed at the facility and the unit. While collecting certain hydrogeological information may be appropriate, a full-fledged and complete characterization will most likely not be necessary for some waste management units (e.g., a waste pile) and environmental settings (e.g., arid climates).