

US EPA ARCHIVE DOCUMENT

February 12, 1998

D-8J

[Facility Contact]
[Facility Name]
[Facility Address]

Re: Region 5 RCRA Subtitle C Corrective Action Risk
Assessment Guidance
[Facility Name]
[Facility I.D. No.]

Dear [Facility Contact]:

The Region has evaluated the progress of Resource Conservation and Recovery Act (RCRA)-regulated facilities through the corrective action process. We are concerned about the progress of these efforts. This letter is an attempt to clarify our expectations in order to streamline the corrective action process. The Waste, Pesticides and Toxics Division of the United States Environmental Protection Agency (U.S. EPA), Region 5 is providing facilities undergoing a RCRA Facility Investigation (RFI) with the enclosed "Corrective Action Principles" guidance as well as several other available guidance documents. Our goal is to assist RCRA-regulated facilities with risk assessments performed during the corrective action process. We feel that this clarification will also be useful in the development of stabilization measures which we believe are an important way to mitigate environmental impacts. This effort is not intended to limit the requirements provided in RCRA Administrative Orders and Permits, nor does it constitute a request by Region 5 for additional work. The Region retains the right and authority to act at variance with the enclosed guidance based on site-specific conditions. The goal of the following is to provide additional information and clarification on the implementation of certain corrective action related concepts. The Region encourages facilities to consult with their State environmental regulatory agency to ensure that these concepts are implemented such that all State requirements are also satisfied.

Land Use Planning and Assumptions

The *Advanced Notice of Proposed Rulemaking (ANPR)* for Corrective Action (Federal Register, Volume 61, Number 85, May 1, 1996) provides for consideration of current and future land use at RCRA facilities as a means of expediting the overall corrective action process. Land use assumptions and future land use options need to be developed as part of the conceptual site model early in the RFI process. The EPA directive *Land Use in the CERCLA Remedy Selection Process (OSWER 9355.7-04, May 25, 1995)* should be used to determine the types of information needed to support and justify assumptions regarding future land uses.

As suggested in the CERCLA directive, input from local citizens, local land use authorities, and facility owners should be elicited on future land use. These discussions should take place early in the RFI process and primarily focus on: 1) anticipated and desired future land uses; 2) environmental justice concerns; 3) ecological and/or natural resource concerns that would influence future land uses; and 4) the possibility of multiple future land uses at large facilities.

Future land use scenarios (e.g., designation as recreational land use) should be included in the baseline risk assessment in addition to current land use scenarios. Consideration of non-residential future land uses in the risk assessment may require the implementation of institutional controls and land use restrictions for part or all of a particular facility. EPA does not expect that institutional controls will often be the sole remedial action at a facility (*ANPR*). Potential benefits of permanent remediation include increased land value, lower maintenance costs, and the fact that costly long-term monitoring will not be required.

Risk-Based Screening Options

Chemical constituents in soil - The *ANPR* provides that individual chemical constituents present at a facility undergoing corrective action may be eliminated from further consideration by comparison of each site-specific constituent concentration to a pre-determined screening level. Effective site characterization for chemical constituents is the key factor which ensures that comparison of characterization results with pre-determined screening levels will result in accurate and protective decisions. The *Soil Screening Guidance: Users Guide* (OSWER Publication 9355.4-23, April 1996) and the *Soil Screening Guidance: Technical Background Document* (EPA/540/R-95/128, May 1996) include tables of generic soil screening levels (SSLs) which were developed for the chemicals detected most frequently at Superfund sites. The calculated generic screening levels rely on specific risk-based assumptions and parameters that result in the following limitations:

- 1) The SSLs were calculated for approximately 110 chemicals. However, RCRA corrective action can include a much larger list of potential chemicals of concern. Therefore, many potential RCRA constituents are not included in the SSL guidance.
- 2) The SSLs were calculated using parameters that are based on residential land use. If non-residential land uses (e.g., industrial, agricultural, recreational) are proposed and appropriate, then screening levels based on the proposed non-residential uses must be developed.
- 3) The SSLs are based on default exposure pathways (direct soil ingestion and direct inhalation of contaminants or particulate matter) as well as modeled pathways (migration of chemicals from soil to ground water). If other exposure pathways (e.g., dermal exposure, food chain exposure) apply to a facility because of location, the type of chemicals of concern, or the potential receptors, then these additional pathways must be included in the development of the screening levels.

The EPA Soil Screening Guidance should be used for developing the necessary site-specific screening levels for soil contaminants. The SSL guidance provides methodologies that can be used to derive site-specific screening levels, although the derivation of screening levels may require extensive resources. An alternative to developing site-specific screening levels is to use the Preliminary Remediation Goal (PRG) values developed by U.S. EPA, Region 9. The PRG values circumvent the limitations of the SSLs as follows:

- 1) PRGs were derived for over 200 RCRA constituents.
- 2) The Region 9 values were derived for both residential and industrial land use scenarios.
- 3) Development of the PRGs involved consideration of the most common exposure pathways incurred at sites (i.e., ingestion, inhalation, and dermal contact).

Chemical constituents in groundwater - EPA has a throughout-the-plume/unit boundary point of compliance policy for ground water and expects all usable groundwaters to be returned to their maximum beneficial uses wherever practicable. To the extent possible, Maximum Contaminant Levels (MCLs) should be used as target cleanup levels in order to return groundwater to the maximum beneficial use (i.e., cleanup levels and screening levels should always account for potential residential use of groundwater). Based upon the use of MCLs as cleanup levels, MCLs should also be considered as applicable screening levels. However, MCLs exist for less than 100 chemicals (*Drinking Water Regulations and Health Advisories; October 1996*). Chemicals which do not have a listed MCL should be sampled and screened against the Region 9 PRG values for drinking water.

The Role of CSGWPPs in EPA Remediation Programs (OSWER Directive 9283.1-09) allows for the use of Comprehensive State Ground Water Protection Programs (CSGWPP) for determining current and future groundwater uses in EPA remediation programs. EPA would defer to State and local policies, priorities, and standards if an approved CSGWPP exists for a particular State.

Evaluation of risk-based screening levels and procedures - Screening levels will be evaluated for appropriateness on a site-specific basis according to the following criteria:

- 1) The analytical detection limit/reporting limit for a constituent must be sufficient to demonstrate that the screening level can be achieved through field sampling and laboratory analysis. The purpose is to demonstrate that undetected constituents (“nondetects”) could not actually be present above the proposed screening level. Consequently, a chemical constituent is a suitable candidate for screening if the detection limit for the chemical is low enough to ensure that the screening level can be attained during the sampling and analysis program. In order to select detection limits/reporting limits suitable for use in risk screening, it is suggested that facilities consult Region 5 RCRA Data Quality Levels.
- 2) Risk-based screening procedures must consider additive (cumulative) cancer and noncancer health impacts from the presence of multiple chemicals. This is particularly

important for facilities proposing to eliminate chemicals from a baseline risk assessment. The effect of eliminating multiple chemicals with potentially adverse human health endpoints may be to incorrectly dismiss a significant amount of risk. For this reason, target levels for screening of individual chemicals must be suitably conservative. As stated in the Soil Screening Guidance, this is accomplished by setting a “one-in-a-million” (1×10^{-6}) individual excess target risk for each carcinogenic chemical and a target hazard quotient (HQ) of 1.0 for each noncarcinogenic chemical. These target levels are based on the following rationale: 1) since the carcinogenic risk of multiple chemicals is additive, the 1×10^{-6} risk screening level for individual chemicals and pathways should lead to a cumulative cancer risk within the 1×10^{-6} to 1×10^{-4} range for the combination of chemicals usually found at RCRA sites; 2) an HQ of 1.0 corresponds to a threshold dose below which adverse health effects are not expected to occur. In general, HQs should only be added for chemicals which exhibit the same toxic endpoint and/or mechanism of action. If the results of a screening procedure indicate that there should be a significant concern for cumulative human health effects, the EPA may require further investigation of specific chemicals and areas at a given site. In addition, for the screening of chemical constituents in ground water, special consideration will be given to the use of MCLs. (For certain constituents, the MCL does not correspond to a 1×10^{-6} cancer risk level.)

Ecological Risk Concerns

Region 5 has a stated policy (*Ecological Assessments*, April 30, 1991 Memorandum) that ecological risk concerns and the preservation of ecological habitats must be considered at all RCRA facilities. This will require that at least a Screening Ecological Risk Assessment (SERA) be performed during the RFI.

Some important considerations for developing a SERA and for determining ecological screening levels (ESLs) include:

- 1) Field sampling to address both ecological and human health concerns may need to be performed at a RCRA facility.
- 2) The locations for field sampling to address ecological and human health concerns may be different.
- 3) Derivation of ESLs is more problematic than those for human health risk because ESLs may need to consider multiple sensitive species and variations in biological habitats.
- 4) Contaminant pathways and exposure to species will be unique to each facility and require a distinct conceptual model.
- 5) For specific chemicals, ESLs for soil could be lower than the corresponding human health soil screening levels.

EPA Project Managers and ecologists will work with facilities to determine the potential ecological risk concerns and to suggest appropriate ESLs.

Region 5 has developed Ecological Data Quality Levels (EDQLs) in order to assist facilities in the ecological risk screening process. The purpose of the EDQL values for each chemical and for each media are to provide conservative default values when a conceptual site model is lacking and representative species of concern have not been identified. When an indicator species is identified, the species-specific EDQL value can be applied.

Historical Data

Sampling data gathered during previous investigations may be used *in lieu* of new data collected as part of the RFI. The inclusion of historical sampling data in the RFI is appropriate as follows:

- 1) Historical data may be utilized if it meets the data quality objectives of the RFI.
- 2) Historical data may be used as a means of identifying potential chemicals of concern, suggesting the location of hazardous material releases, or estimating constituent concentrations that are present in a contaminated area.
- 3) Historical data may be used for comparison to risk-based screening levels, subject to approval by EPA. Additional sampling may be necessary to reduce the uncertainty when using historical data in this manner.

Enclosed with this letter is a list and copies of Regional risk guidance documents which may be useful in implementing corrective action at your facility. For copies of guidance documents that are not enclosed you can contact the RCRA Hotline at (1-800-424-9346) and you will be provided directions on how to obtain the document of interest. You may also contact your EPA Project Manager for assistance and further information.

Sincerely yours,

original signed by NN

Norman Niedergang, Director
Waste, Pesticides and Toxics Division

Enclosures

ENCLOSURE

Reference List

The following list comprises risk guidance documents and other information, in chronological order, which may be useful in implementing corrective action pursuant to RCRA Sections 3004(u), 3004(v), and 3008(h). This list does not include every guidance document pertaining to work performed under corrective action.

“Alternate Concentration Limit Guidance, Part 1: ACL Policy and Information Requirements,” Interim Final, OSWER Directive 9481.00-6C, July 1987.

“Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference Document,” EPA 600/3-89/013, March 1989.

“Interim Final RCRA Facility Investigation (RFI) Guidance,” Volumes I-IV, EPA/530/SW-89-031, May 1989.

“Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A),” Interim Final, EPA/540/1-89/002, December 1989.

“Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors,” OSWER Directive 9285.6-03, March 25, 1991.

“Framework for Ecological Risk Assessment,” EPA/630/R-92/001, February 1991.

“Final Guidance for Data Useability in Risk Assessment,” (Parts A & B), OSWER Directive 9285.7-09A, April 1992.

“Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration,” OSWER Directive 9234.2-25, September 1993.

“RCRA Corrective Action Plan,” OSWER Directive 9902.3-2A, May 1994.

“Ecological Risk Assessment Guidance for RCRA Corrective Action,” U.S. EPA, Region 5, Interim Draft, October 1994.

“Land Use in the CERCLA Remedy Selection Process,” OSWER Directive 9355.7-04, May 25, 1995.

“Standard Guide for Risk Based Corrective Action Applied to Petroleum Release Sites,” ASTM E-1739-95, November 1995. (Note: As approved by Region 5 guidance policy.)

“*Conducting Risk-Based Corrective Action for Federally-Regulated UST Petroleum Releases,*” U.S. EPA, Region 5, December 7, 1995.

“*Sitting at the RCRA Data Quality Level Table, Update 1,*” U.S. EPA, Region 5, Memorandum, December 14, 1995.

“*Soil Screening Guidance: Users Guide,*” OSWER Publication 9355.4-23, April 1996.

“*Soil Screening Guidance: Technical Background Document,*” EPA/540/R-95/128, May 1996.

“*Corrective Action for Releases From Solid Waste Management Units at Hazardous Waste Management Facilities,*” Advanced Notice of Proposed Rulemaking, 61 Fed. Reg. 19432, May 1, 1996.

“*Region 9 Preliminary Remediation Goals (PRGs) 1996,*” U.S. EPA, Region 9, Annual Update, August 1, 1996.

“*EPA’s Proposed Guidelines for Ecological Risk Assessment,*” 61 Fed. Reg. 47552, September 9, 1996. (Note: Final document to be released in early-1998.)

“*Corrective Action Principles,*” U.S. EPA, Region 5, Memorandum, November 19, 1996.

“*Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments,*” Interim Final, EPA/540/R-97/006, June 5, 1997.

“*Ecological Data Quality Levels, RCRA Appendix IX Hazardous Constituents,*” U.S. EPA, Region 5, Draft Report, August 18, 1997.