



DEPARTMENT OF THE NAVY

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE, INDIANA 47522-5000

N00164.AR.000622
NSWC CRANE
5090.3a

IN REPLY REFER TO:

5090
Ser 095/1036

U.S. Environmental Protection Agency, Region V
Waste, Pesticides, & Toxics Division
Waste Management Branch
Illinois, Indiana, and Michigan Section
ATTN: Mr. Peter Ramanauskas (DW-8J)
77 West Jackson Blvd.
Chicago, IL 60604

Dear Mr. Ramanauskas:

Crane Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Crane) submits two copies of the response to comments and change pages for the final Work Plan for Risk Assessment at Solid Waste Management Units 4, 5, 9, and 10. This submittal, presented as enclosure (1), is made in response to comments from the U.S. Environmental Protection Agency dated October 31, 2000 and November 30, 2000. The permit required Certification Statement is provided as enclosure (2).

NAVSURFWARCENDIV Crane point of contact is Mr. Thomas J. Brent, Code 09510, telephone 812-854-6160.

Sincerely,

James M. Hunsicker
Director, Environmental
Protection Department
By direction of the Commander

Encl:

- (1) Response to Comments on Risk Assessment Work Plans
- (2) Certification Statement

Copy to:

ADMINISTRATIVE RECORD
SOUTHNAVFACENCOM (Code 1864) (w/o encl)
IDEM (Doug Griffin)
TTNUS (Ralph Basinski) (w/o encl)

ATTACHMENT 1

RESPONSES TO:

- **CONDITIONS ATTACHED TO OCTOBER 31, 2000
U.S. EPA REGION 5 APPROVAL LETTER
SWMUs 4, 5, 9, AND 10 WORK PLAN**
- **U.S. EPA REGION V, NOVEMBER 30, 2000
COMMENTS ECOLOGICAL RISK ASSESSMENT
SWMUs 4, 5, 9, AND 10 WORK PLAN**

**Conditions Attached to October 31, 2000 US EPA Region 5 Approval Letter
SWMU 4/5/9/10 Work Plan**

Condition 1:

Referring to the Navy's response to the second e-mail comment dated September 14, 2000, we would prefer that the Navy follow the low-level procedure of method 5035 for analysis by 8015 as described in the last paragraph of the response versus the high level technique because the toxicity of acetonitrile is high and the PRG values would be correspondingly low.

Response

The use of method 5035, for low level analysis where a closed system is not available is alluded to in section 6.2.1.8 of the method. Here it specifies that, if EnCores are used, these should be transferred to soil sample vials as soon as possible or analyzed within 48 hours. Laucks will conduct the analysis by method 5035/8015. The EnCore device will be frozen within 48 hours of collection (or as soon as possible after receipt). The sample will be transferred to a soil vial, water and surrogate added, immediately prior to analysis thus maintaining the "closed system. Analysis will be conducted within 7 days of sample collection. Laucks is capable of performing heated purge for this method.

Condition 2:

In Section 10.1.2, page 10-5, of the work plan, please note that the second condition of the first sentence of the second paragraph should apply only to those chemicals for which comparison to background has been deemed appropriate.

Response

The second condition of the first sentence of the second paragraph will be revised as follows. "2) the chemical is determined to be present at concentrations exceeding background. Note that this second condition applies only to those chemicals for which background comparison is appropriate, i.e., metals.

Condition 3:

In Section 10.1.2.1., page 10-6, please note that the risk-based U.S. EPA Region IX screening concentrations are based on a hazard quotient of 1.0 for individual chemicals. Please clarify if this sentence is meant to reflect that the risk-based screening levels will be based on a hazard quotient of 0.1 to ensure that additive risks for all chemicals will not exceed 1.0 as noted in the footnote to Figure 4-1.

Response

This paragraph will be revised as follows: "Several types of screening levels will be used to identify COPCs for SWMUs 4, 5, 9, and 10. Screening concentrations based on U.S. EPA Region IX Preliminary Remediation Goals (PRGs) (U.S. EPA, Region IX, October 2000) will be used, as well as other IDEM and U.S. EPA criteria. The risk-based screening concentrations will correspond to a systemic hazard quotient of 0.1 (for noncarcinogens) or a lifetime cancer risk of 1E-6 (for carcinogens). Note that the Region IX PRGs are based on a hazard quotient of 1.0 while the screening concentrations are based on a hazard quotient of 0.1. The screening concentrations are based on a hazard quotient of 0.1 to insure that additive noncarcinogenic risks for all chemicals do not exceed 1.0. The screening levels to be used for each media in the risk assessment are briefly discussed below."

Condition 4:

As stated in Section 10.1.2.1., the site soil data will be compared to the U.S. EPA generic SSLs for transfers of soil to air to identify whether a quantitative analysis of this exposure pathway is needed. Based on this language, the U.S. EPA is expecting that each contaminant having a maximum soil concentration exceeding the corresponding soil-to-air SSL will be moved forward in the baseline risk assessment. This procedure will be used to determine which contaminants will be addressed in the quantitative evaluation of the inhalation exposure pathway. On the other hand, if the comparison data provide convincing evidence that no site contaminants are present at concentrations exceeding the corresponding SSLs, then the inhalation pathway will be eliminated from further evaluation. The HHRA report will provide a full explanation of all decisions made by employing the COPC screening levels.

Response

Comment acknowledged.

Condition 5:

Referring to Section 10.2.4., page 10-13, second paragraph, non-carcinogenic intake estimation should be changed to “average *daily* exposure” and carcinogenic intake estimation to “lifetime *average daily* exposure”.

Response

This sentence will be revised as follows: “Noncarcinogenic intakes will be estimated using the concept of an average daily exposure. Carcinogenic intakes will be calculated as an incremental lifetime average daily exposure, which will assume a life expectancy of 70 years.”

Condition 6:

Section 10.2.4.3. states that RME and CTE values of 1.0 and 0.5, respectively, will be used for the “FI” parameter (fraction of soil ingested from the source). However, the RAGS document and the 1993 EPA memo on standard default exposure factors for the RME and CTE state that the FI is a value for which reliable site-specific information would be needed on the behavior of the receptor population and the possibility that the same receptor could contact both contaminated and non-contaminated media. In the absence of such information, we believe that the conservative default value of 1.0 should be used for both the RME and CTE cases.

Response

The sentence in Section 10.2.4.3 will be revised as follows: “The default value of 1.0 will be used for the fraction of soil ingested from the source for the RME and CTE exposure scenarios”.

Condition 7:

Referring to Table 10-3, on page 10-14, the “IR_s” value for CTE should be 100 as the rationale assumes similarity to adult exposure. Also, the RME and CTE “SA” values for Maintenance/Occupational Worker and Adult Recreational User noted in the Table and in the bulleted text on pages 10-19 & 10-20 should include skin surface area of the head or face.

Response

Since, as stated by the reviewer, the rationale assumes similarity to adult exposures (adult IR_s for RME is 100 mg/day and adult IR_s for CTE is 50 mg/day), it is not necessary to change the CTE to 100.

In regard to skin surface area, recent USEPA guidance (RAGS-Part E) recommends that 50th percentile

values of the skin surface area be used. Based on the RAGS-Part E guidance, the following changes will be made to Table 10-3 and relevant text.

The skin surface area of the worker is limited to the head, hands, and forearms. The skin surface areas should represent the 50th percentile values for both the RME and CTE. For workers, RAGS-Part E recommends a value of 3,300 cm² for the RME and CTE. This surface area will replace the surface area for the maintenance/occupational worker in Table 10-3.

For the adult recreational user, the 50th percentile area of the head (1,300 cm²) will be added to the exposed skin surface area for the CTE (7,770 cm²) in Table 10-3. The new value, 9,070 cm², represents the 50th percentile values of the feet, lower legs, hands, arms, and head for this receptor. This skin surface area will be used for the RME and CTE exposure scenarios, as recommended by RAGS-Part E. The new surface areas for these receptors will be as follows:

Maintenance/Occupational Worker

Surface Area for the RME = 3,300 cm²
Surface Area for the CTE = 3,300 cm²

Adult Recreational User

Surface Area for the RME = 9,070 cm²
Surface Area for the CTE = 9,070 cm²

**US EPA Region 5 Comments
November 30, 2000
Ecological Risk Assessment
SWMU 4/5/9/10 Work Plan**

Comment 1: Referring to Response to Comment 33, during the July conference call Aaron Bernhardt explained that the omnivorous mammals & birds would be less sensitive than carnivores. U.S. EPA requested during the call that this be stated/explained in this section. The work plan needs to state or explain the above. The remaining response is acceptable.

Response

It is not that the omnivores are less sensitive than carnivores, it is that they would receive a lower dose than either a herbivore or a carnivore, depending upon the contaminant. For example, a contaminant like PCBs accumulates in earthworms to a greater degree than it accumulates in plants. Therefore, an animal that consumes only earthworms (i.e., a carnivore) would receive a higher dose than an omnivore that consumes earthworms and plants, because only a portion of their diet would consist of the earthworms.

The following sentences will be added to the first complete paragraph on page 11-9 to clarify this: "Omnivores will not be evaluated in the SERA because exposure to contaminants in plants is highest for herbivores, and exposure to contaminants in animals is highest for carnivores. Therefore, omnivores will be protected by protecting herbivores and carnivores."

Comment 2: Referring to Response to Comment 37, add a statement that background concentrations will be discussed in the Basewide Background Report. The remaining response is acceptable.

Response

The following sentence will be added to the first paragraph on page 11-12: "Background concentrations are discussed in the Basewide Background Report."

Comment 3: Referring to Response to Comment 40, the confusion with the original comment and supporting Dutch papers (same author) appears to be with the definition of the term Maximal Permissible Risk level for ecosystems (MPR_{eco}). The original Dutch conference paper explains that MPR_{eco} is defined as the HC95 (Hazardous Concentration 95), i.e., 95% protection. The published paper, Risk-Based Assessment of Soil and Groundwater Quality in the Netherlands and Remediation Urgency by Frank A. Swartjes (Risk Analysis, Vol. 19, No. 6, 1999 pp 1235-1249), on the same topic was revised to define MPR_{eco} as the HC5 (Hazardous Concentration for 5% of the species in the ecosystem), i.e., 95% protection. If the Dutch risk numbers are used, the "Target Value for Soil" from Appendix A of the above paper will be applied in the risk assessment. A copy of this paper is attached.

Response

The Dutch numbers are being used, in conjunction with the other available soil screening values, to better evaluate potential risks to chemicals that are retained as COPCs (i.e., concentrations exceed the EDQLs). Therefore, both the Target Values and Intervention Values, along with other screening levels, will be presented during this step of the SERA in a line of evidence approach.

Comment 4: In various areas throughout QAPP Section 1.4.3., it is stated that MDLs/RLs for certain constituents exceed ecological screening levels. The text goes on to state that the low-level risk targets for those constituents were developed for a more susceptible species than the endangered Indiana Bat, and that the risk-based target levels for this species would be higher. The absence of these constituents would be confirmed by a nondetect at the RL listed in Table 1-1. However, there is no specific information in the QAPP document to support why the risk target level should be higher

and there is no alternate risk target level recommended for the Indiana Bat. U.S. EPA has previously provided the Navy with specific equations used to develop species specific ecological screening levels (ESLs). Unless the Navy proposes specific equations or an approach to develop ecological risk target levels for the Indiana Bat, U.S. EPA will accept the use of the current Region 5 ESLs as reflected in the QAPP. However, U.S. EPA recommends that if the constituent is non-detected at the RL, the constituents should be carried through the eco risk screening at one-half of the MDL as agreed to during the Mustard Gas Burial Ground conference call of June 13, 2000.

Response

If a constituent is non-detected in an environmental medium and the RL exceeds ecological screening levels, the constituent, its reporting limit, and the EDQL will be summarized in a table and qualitatively discussed in the uncertainty analysis section. The constituent will not be quantitatively carried through the risk assessment because of the high amount of uncertainty interjected into the risk assessment results as a consequence of use of the non-detected data. However, the exposure point concentrations for chemicals selected as chemicals of potential concern will be calculated using one half the sample specific quantitation limits as a surrogate value for non-detect results. The EP evaluated in the ecological risk assessment shall not exceed the maximum detected concentration. If a constituent is detected in at least one sample at levels greater than the RL, $\frac{1}{2}$ of the RL will be substituted for the non-detects. Also, the data will be reviewed using professional judgement and the 5% frequency of detection rule as agreed to during the Mustard Gas Burial Ground conference call of June 13, 2000 when interpreting the results.

ATTACHMENT 2

**CHANGE PAGES TO WORK PLAN
FOR RISK ASSESSMENT AT
SWMUs 4, 5, 9, AND 10**

**INSTRUCTIONS FOR UP-DATING OF WORK PLAN FOR
RISK ASSESSMENT AT SWMUs 4, 5, 9, AND 10**

Replace existing Page 10-5/10-6 with attached 10-5/10-6, both dated February 2001.

Replace existing Page 10-13/10-14, both dated October 1999, with attached 10-13 (February 2001)/10-14 (October 1999).

Replace existing Page 10-15/10-16, both dated October 1999, with the attached 10-15/10-16, both dated February 2001.

Replace existing Page 10-19/10-20, both dated October 1999, with the attached 10-19/10-20, both dated February 2001.

Replace existing Page 10-21/10-22, both dated October 1999, with the attached 10-21 (February 2001)/10-22 (October 1999).

Replace existing Page 11-11/11-12, both dated August 2000, with the attached Page 11-11(August 2000)/11-12 (February 2001).

5090
Ser 095/1036

08 FEB 2001

The letter Ser 095/1036 was for the
submittal of replacement pages for the
Final Risk Assessment Workplan MCG, OPB,
PCA, & RKI. The replacement pages have
been incorporated into the previously
submitted Workplan on 12/10/99.

