



# Minnesota Pollution Control Agency

March 26, 1998

VIA FAX AND CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Thomas Bloom, SR-6J  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

RE: Naval Industrial Reserve Ordnance Plant Superfund Site

Dear Mr. Bloom:

I am writing to bring to your attention a "to be considered" (TBC) that should be included in the Naval Industrial Reserve Ordnance Plant (NIROP) Site Five-Year Review (Review) that you are currently writing. The TBC, relating to human health, was not included in the applicable or relevant and appropriate requirement (ARAR) discussion of the NIROP Record of Decision (ROD), dated September 28, 1990. The Review provides an opportunity to update the ARARs that apply to the site and I am forwarding you this information so that it may be included in the ARAR discussion section of the Review.

As we recently discussed, the document entitled, "Ambient Water Criteria for Trichloroethylene," EPA 440/5-80-077, dated October 1980, is the correct reference for the aquatic life Ambient Water Quality Criteria (AWQC) cited in the "Actual or Potential Environmental Risks" Section of the NIROP ROD.

The ROD, in effect, established these criteria as TBCs for Operable Unit 1 (OU1); they are not ARARs because they are not promulgated. The aquatic criteria are designed to protect aquatic life in the Mississippi River. The ROD correctly identified these TBCs as the acute toxicity AWQC of 45,000 micrograms/liter ( $\mu\text{g/l}$ ) trichloroethylene (TCE) and the chronic toxicity AWQC of 21,900  $\mu\text{g/l}$  TCE. The ROD compared these TBCs to the highest concentrations of TCE thought to be flowing into the river at this time (up to 12,700  $\mu\text{g/l}$  TCE) and concluded that "...these criteria will not be exceeded."

As we discussed, the "Ambient Water Criteria for Trichloroethylene" document also identified a human health AWQC to protect the Mississippi River as a source of drinking water for people. In effect, this human health AWQC is a human health TBC for OU1. The TBC is 27  $\mu\text{g/l}$  TCE and represents an incremental increase of cancer risk of  $10^{-5}$  over a lifetime. This important TBC and evaluation of site ground water site conditions against it were not included in the ROD.

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The 27  $\mu\text{g/l}$  TBC should have been included in the ROD and the concentration of TCE in the NIROP plume compared against it just as the ROD compared the TCE concentrations in the ground water with the aquatic TBC. If this had been done, the ROD would have concluded that this criterion would have been significantly exceeded.

In the section of the ROD entitled, "The Selected Remedy" the ROD states "...contaminants in any noncaptured portion of the aquifer are expected to dissipate by natural means over time to levels that are protective of human health and the environment." An evaluation of the NIROP plume would have indicated that the remedy would have been only partially protective of public health until such time as the portion of the downgradient plume would have dissipated to below human and ecological health criteria. Monitoring wells installed in Anoka County Regional Park to monitor the effectiveness of the remedy have since shown that this dissipation has not occurred as expected and the Navy is doing additional investigation to evaluate the levels of contamination in ground water in the park.

This federal TBC establishes a level of 27  $\mu\text{g/l}$  for protection of human health which would be applied at the point of discharge prior to ground water entering the river in a similar way that the current water quality standard of 5  $\mu\text{g/l}$  is being applied. The TBC should further support changing the type of review from a Type Ia to a Type I or higher level review because it establishes that the remedy was only partially protective of human health.

Please find enclosed a memorandum to me from David Maschwitz, dated March 25, 1998, that provides a much more comprehensive discussion of surface water criteria that need to be considered for the NIROP Five-Year Review.

Please consider this letter and the enclosure as an addendum to my letter to you of March 12, 1998, regarding the draft Review for OU1.

If you have any questions regarding this letter, please contact me at (612) 296-7818.

Sincerely,



David N. Douglas  
Response Unit I  
Site Response Section  
Ground Water and Solid Waste Division

DND:ch

Enclosure

cc: Scott Glass, U.S. Navy  
Dan Pena, Minnesota Department of Health

## Office Memorandum

DATE: March 25, 1998  
TO: David Douglas  
John Betcher  
Ground Water Site Response

FROM: David E. Maschwitz *DEAM*  
Monitoring and Assessment Section  
Water Quality Division

PHONE: 296-7255

SUBJECT: Surface Water Criteria in the Navy-NIROP Record of Decision

It has come to my attention that the acute and chronic surface water criteria cited in the September 28, 1990, Record of Decision for Ground Water Remediation, Naval Industrial Reserve Ordnance Plant (the Navy-NIROP ROD) do not address all the beneficial uses for which the Mississippi River is protected, and all the potential environmental concerns to the river emanating from this site.

The ambient water quality criteria numbers for Trichloroethylene (TCE) cited on page 24 of the ROD are:

Chronic,	21.9 mg/L
Acute,	45 mg/L (parts per million)

The above numbers are Environmental Protection Agency (EPA) aquatic life "criteria", taken from, *Ambient Water Quality Criteria for Trichloroethylene*, EPA 440/5-80-077, October, 1980. While not the main issue here, it is worth noting that these numbers are not full EPA criteria but are "as low as" values. This means there was insufficient toxicity data for TCE to satisfy the data requirements of EPA's criteria calculation method. In such cases the EPA criteria documents would cite the lowest acute and chronic values available and conclude, "that acute [chronic] toxicity to freshwater aquatic life occurs at concentrations as low as \_\_\_\_."

The two values, 45 and 21.9 mg/L, relate to the direct toxicity of TCE to fish and other aquatic organisms. TCE is not very toxic to aquatic life, but it does pose a greater threat to humans. These "criteria" do not address the human health aspects of the beneficial uses for which the Mississippi River is protected in the reach adjacent to the Navy-NIROP site. Human health-related uses include drinking water and human consumption of sport caught fish from the river. When these uses are factored into the criteria determinations, numbers about 1000 times more stringent result. The EPA criteria document cited above includes a human health-related criterion of 27 ug/L which was not mentioned in the ROD. It is the consideration of these human health-related uses of the surface waters that the ROD should have addressed.

The following tables list the EPA and Minnesota Pollution Control Agency (MPCA) criteria and standards, including those pertaining to the human health uses, that were applicable at the time the ROD was published, and those that are in place now. In this context, the term "criterion" refers to concentrations of a pollutant in water determined to be safe or protective of a specific beneficial use (e.g., drinking water, fisheries and recreation) that has not been adopted into a state's water quality rules; and the term "standard" refers to a criterion that has been adopted into a state's water quality rules. Criteria can be of federal (EPA) or state (MPCA) origin, standards are the Minnesota water quality standards found in Minn. R. ch. 7050.

#### Criteria and Standards for TCE in Effect on September 28, 1990

Use	Acute or Chronic	EPA ug/L	Standard or Criterion	MPCA ug/L	Standard or Criterion
drinking water (HH)	chronic	5	standard	5	standard
drinking water + fish consumption (HH)	chronic	27	criterion	25	criterion
aquatic life	chronic	21,900	criterion	na	criterion
aquatic life	acute, maximum	na	criterion	5,088	criterion
aquatic life	final acute value	45,000	criterion	10,175	criterion

#### Criteria and Standards for TCE in Effect Currently

Use	Acute or Chronic	EPA ug/L	Standard or criterion	MPCA ug/L	Standard or criterion
drinking water (HH)	chronic	5	standard	5	standard
drinking water + fish consumption (HH)	chronic	27	criterion	25	standard
aquatic life	chronic	21,900	criterion	na	criterion
aquatic life	acute, maximum	45,000	criterion	2500*	standard
aquatic life	final acute value	45,000	criterion	5000**	standard

Notes: na = none available; HH = human health-related

\*For carcinogenic (or bioaccumulative) chemicals, the maximum standard is the toxicity-based value (6,988 ug/L) or 100 times the chronic standard, which ever is lower.

\*\*For carcinogenic (or bioaccumulative) chemicals, the final acute value standard is the toxicity-based value (13,976 ug/L) or 200 times the chronic standard, which ever is lower.

These tables show that the critical human health-related criteria and standards in effect at the time the ROD was prepared are essentially the same as those in effect now.

To reiterate the Water Quality Division position with regard to the Navy-NIROP site, due to its unique aspects discussed in our memo to you dated July 9, 1997, the chronic drinking water standard (5 ug/L) is applicable and should be met in the wells closest to the river. In other words, to protect downstream drinking water supplies, the contaminated ground water plume presumed to be entering the river is not given the benefit of dilution by the river.