ATTACHMENT I

U.S. EPA RESPONSE TO COMMENTS

Overview

The EPA Statement of Basis, containing the proposed remedy for the Tyco Safety Products - Ansul Facility (Ansul), was made available for public review and comment on September 10, 2007. A public meeting was held on September 20, 2007, at the temporary City Hall, Marinette, Wisconsin to accept oral comments on the proposed remedy. The 45-day public comment period was held from September 10, 2007, through October 29, 2007. The EPA received nine oral questions and comments from those attending the September meeting and received twenty-one written questions and comments during the comment period.

The purpose of this document is to provide response to comments received during the 45-day public comment period. All comments received by U.S. EPA are summarized and responses are included below. The transcript of the public meeting held on September 20, 2007, and all public comments received through October 29, 2007 are provided in Attachment II, Index to Administrative Record.

Comments and Responses

Oral Comments

The following narrative summarizes the oral comments and questions by the community to EPA at the September 20, 2007 public meeting and provides the Agency's response to each comment. Each oral comment is numbered and presented in italicized type. In some cases, the question or comment is paraphrased.

1. *Will precautions be used to prevent the dredging project from causing additional contamination in other parts of the river?*

All appropriate and available precautions will be used to help prevent any additional spreading of contamination into other parts of the river during dredging operations. Examples of these precautions are silt curtains in the river and surface water quality sampling. Ansul will be required to submit to the EPA and WDNR a work plan for review and approval that will describe the dredging process and the steps it will take to prevent the spread of contamination during dredging. This work plan will also contain performance criteria for dredging and a monitoring program that will test whether the dredging is being performed appropriately. Some appropriate monitoring activities that are expected to be included are: turbidity measurements of the river water downstream of the active dredging, chemical analyses of what is getting into the surface water

downstream of the active dredging, etc.

2. *What is the idea behind using groves of trees on-site to address the arsenic contamination?*

Ansul will plant several hundred trees throughout its property to help keep underground water from coming to the surface. The trees are considered to be part of the groundwater control remedy and will not have any significant effect on arsenic concentrations in the soil or groundwater. The trees that will be planted are particularly good at "pumping" or "sucking up" significant volumes of groundwater through their roots. At Ansul, the groundwater will be contained within the underground walls which will entirely encircle the active part of the facility instead of flowing into the Menominee River which it would do normally. There is a concern that the ground could become saturated to the surface. To prevent this from happening, Ansul will pump the groundwater mechanically, when needed, such as at times when the trees are dormant or otherwise are not pumping sufficiently.

The trees were tested for their pumping capacity in 2006 and found to be quite effective (pilot study). The amount of arsenic in the leaves was analyzed and found to be at safe levels to return to the soil as organic matter.

3. *What will happen to the arsenic contamination that travels from the groundwater into the tree roots and up into the leaves of the tree?*

The tree rooting zone is the shallow aquifer where the contamination is less concentrated. The pilot study has shown that arsenic does not accumulate in the woody portion of the tree but does however, tend to accumulate in the leaves. Recently, Ansul has taken some of these leaves and tested them. The average concentration of arsenic is less than 2.2 mg/kg dry weight. All arsenic concentrations in the leaves were below the local natural soil levels of 6.3 mg/kg dry weight. While a very small portion of the arsenic will accumulate in leaves when they fall from the trees and breakdown into small particles in the soil and groundwater they will not be at hazardous concentrations.

4. *What took US EPA and WDNR so long to address the contamination at Ansul since the date on the Order goes back to 1990?*

The Ansul site has a complex geology and manufacturing history. A significant amount of work has gone into finding the extent of contamination at Ansul, in addition to addressing it. Since the amount of contamination is significant, all parties needed some time to develop cleanup target values for arsenic that would be protective. Currently we know of no reasonable, cost effective technique that would clean up the groundwater on site. Therefore, containment of ground water, capping certain areas and remediation of sediments would protect human health and the environment. Since science and technology is constantly changing and improving, we also intend to reconsider our approach to cleaning up the arsenic in groundwater every 5 years in light of the advances

in environmental cleanup during those 5 years.

5. W*as anyone aware of the seriousness of having arsenic stored openly? Didn't anyone realize that it was a hazard?*

Ansul, the State of Wisconsin and EPA have been working to address the arsenic contamination at and from the site for a long time. In 1971 the State of Wisconsin and Ansul entered a consent agreement which required Ansul to take a number of remediation steps. In 1990 EPA and Ansul entered in to an agreement that required Ansul to investigate the problem and propose additional steps for remediation of arsenic. Since that time Ansul has taken a number of steps to remediate the threats posed by arsenic. One of those steps included closing the 8th street slip.

6. *Is there some kind of legal agreement for the barrier wall and is the barrier wall exposed to corrosion or a potential to be breached at some point?*

Upon selection of the remedy EPA will enter into negotiations with Ansul to implement the remedy. If those negotiations are successful, Ansul and EPA will enter into a legally enforceable agreement. That agreement will identify the major components of the selected remedy and require Ansul to provide further detail such as design, construction and operation requirements and schedules for implementation. If negotiations are not successful, EPA has the authority to order Ansul to implement the remedy. Regarding the potential for corrosion and eventual breaching of the containment barrier, Ansul will be required to submit an Operations and Maintenance work plan; this document will detail the steps to be taken to assure the barrier wall's successful function and will hold the company responsible to ensure the integrity of the barrier wall. It will also describe all of the monitoring that will be done to document the barrier wall is performing as expected.

7. *Is the contaminated sediment located only in the section of river called the turning basin?*

Extensive sediment testing has shown that the largest concentrations and volume of arsenic containing sediment is within the turning basin. Smaller volumes of contaminated sediment, with significantly lower concentrations do occur at locations downstream of the turning basin. These downstream locations, where the sediment concentrations exceed the cleanup standards, will also be remediated.

8. *Will additional testing be done during the dredging and other construction work to ensure that contamination is not being further spread into the environment?*

The EPA and WDNR will continue to monitor and oversee the construction phase of this remedy to ensure contamination is removed and not spread further. Ansul will be required to submit, for Agency approval, a work plan that will address all aspects of construction of the barrier wall and dredging phases of this remedy. This document will describe sampling and other monitoring to ensure the remedy is constructed properly.

9. How w*ill the spoils from dredging be handled?*

All dredging activities will be described in the dredging work plan that Ansul will develop. Typically, once river sediment (dredge spoils) is removed from the river, tests will be done on the spoils to determine whether they are hazardous waste as defined by the EPA. Depending on the results of the tests, the spoils will be disposed of appropriately. In addition, the dredged material (river mud removed from the river) may carry contaminated water. This water will also have to be addressed in the work plan.

Written Comments

The following narrative summarizes the one written letter the Agency received on the proposed remedy and our response to each major comment in that letter. Each written comment is numbered and presented in italicized capital type. The letter was submitted by the facility. Where a response uses the phrase "The Agencies…" it refers to both the EPA and the Wisconsin Department of Natural Resources.

General Comments:

1) *During the public meeting and hearing, an EPA speaker stated soil in the football field located south of Ansul property is contaminated. The SB specifically states (page 9, paragraph 6): "Various properties near the facility not owned by Ansul (the football field between Water Street and the facility and the right-of-way of a few residences on Water Street) have been investigated for the presence of arsenic contamination. However, results indicate that arsenic values are less than the background values in the region, approximately 10 ppm. Therefore, we request that emphasis be given to the fact that off-site soil quality assessment has been performed and soil contamination does not exist with the exception of one soil sample located adjacent to the railroad tracks, immediately to the south of Ansul property.*

EPA disagrees with this comment. Per figures submitted with URS's 2001-2002 RFI and IMI, three off-site soil samples, SB400, SB404 and SB416 detected arsenic at concentrations greater that 16 ppm, the concentration determined to protect human health. These areas will be excavated to a depth where the arsenic concentration is less than or equal to 16 ppm. Ansul will properly dispose of the excavated soils, backfill and regrade the excavated area with clean fill.

2) *The SB proposes capping surface soil with asphalt in high traffic areas and soil or gravel in less used areas. Capping areas with soil that contains arsenic at concentrations greater than or equal to 32 ppm will result in a Facility-wide average arsenic concentration of 16 ppm in surface soils, which is protective of human health and the environment. At this time, the type of capping materials that will be used to cap surface soil in specific areas has not been determined. Asphalt capping is reasonable in areas where surrounding soil is capped by asphalt; however, in other areas, capping*

with soil or gravel may be more appropriate since asphalt would likely deteriorate if used to cover relatively small, isolated areas.

Details of capping will be included in the Work Plan that Ansul will be required to submit to EPA for review and approval. The cap will be protective of human health.

3) *As part of institutional controls, EPA proposes that groundwater be maintained at a "prescribed depth". This term is vague and Ansul suggests that the SB indicate that groundwater levels be maintained at optimal depths below ground surface that prevent flooding the facility.*

We agree that groundwater levels be maintained at depths below ground surface that prevent flooding the facility.

4) *Ansul will develop Institutional Control (IC) Plans for the facility that will expand on the institutional controls already in place to safeguard workers and the community. The SB specifies that the IC Plan be prepared within 120 days of EPA's selection of the remedy. Since protective measures are already in place, Ansul requests that Terrestrial IC Plan for the Manufacturing and Wetland Areas be submitted 180 days after EPA and WDNR approval of the Phase 1 and Phase II Corrective Measures Work Plans. This will allow the IC Plan to be fully coordinated with the corrective measures construction in accordance with the agency-approved Phase I and Phase II Corrective Measures Work Plans. Similarly, an IC Plan for Menominee River sediments would be submitted 180 days after the terrestrial corrective measures construction activities have been completed.*

Upon further review EPA has determined that an IC Plan is unnecessary since the institutional controls are known, straightforward and should be implemented as soon as possible. Instead of identifying a date for submission of an IC Plan, EPA is specifying that the actual institutional controls as identified in the Final Decision should be implemented within one year of the effective date of an enforcement agreement with EPA.

For the land component of the remedy the appropriate institutional control is recording of a deed restriction which ensures that the property use remains industrial, the cover is not disturbed and is inspected and maintained; the ground water barrier wall system is not disturbed and is maintained; and the ground water is maintained at a prescribed depth and is not used for potable purposes. The location of the barrier wall and the soil capping is known; consequently, an IC Plan is not required. Instead of the IC Plan, Ansul should submit to EPA the appropriate deed restrictions within one year of the effective date of an enforcement agreement between the Parties.

For the river component of the remedy the goal of the institutional controls is to ensure that there is no anchoring, digging, dredging or trenching in the contaminated River Sediments area. In the Statement of Basis EPA stated that these restrictions would only be applicable during the period that monitored natural recovery was occurring. Upon

further review and consideration EPA believes that these restrictions should be put in place as soon as possible since it prevents entrainment of contaminated sediments. At the present time those sediments are in excess of 50 ppm; consequently, it is important to limit further distribution and contamination down gradient. We already know the locations where arsenic concentrations in the sediments exceed 50 ppm. We do not see a need for an IC Plan for this component because Ansul can identify and complete the necessary restrictions on its own after consultation with appropriate governmental entities. Consequently, an IC Plan is not required. Instead Ansul will be required to identify the necessary restrictions within 60 days of the effective date of the enforcement agreement and have them effective within one year of the effective date of the enforcement agreement.

5. *A Corrective Measures Study for river sediments was never completed. The SB does not explain why a sand cap remedy or other remedies were rejected.*

The recommended remedy for the site is dredging. The primary reason that any kind of cap was rejected as a remedy at this site is that dissolved arsenic is highly mobile in the environment and when combined with the fact that the highly contaminated groundwater coming from Ansul discharges to the river upward through river sediments, these combined factors make capping a poor remedy. This does not preclude the use of capping as a follow-up to dredging where appropriate and supported by science.

6. *The decision criteria for implementing a sediment corrective measures remedy should be based on demonstration of "source control" as per EPA sediment management "principles", not upon a fixed timeframe.*

EPA will require Ansul to submit, within 180 days of completion of the barrier wall for review and approval, a Sediment Management Plan, describing the removing and disposing of the river sediments and consideration and incorporation of the results of the long-term barrier wall monitoring data. EPA's experience indicates that the barrier wall should significantly reduce arsenic loadings to the sediments. The monitoring will verify this and direct whether additional work is necessary before sediment removal.

7. *Monitored Natural Recovery: Clarify that the basis for the "target" cleanup, i.e., the 20 ppm, should be a "surface-weighted average concentration" or SWAC.*

EPA disagrees with the comment. The Statement of Basis indicates that an averaging method will be developed and submitted by Ansul for agency review and approval. The agencies believe this statement is adequate and does not specify the use of a surface-weighted average concentration (SWAC). The averaging method (of arsenic concentration) can be presented in the sediment management plan, when discussing post-dredge performance measures.

8. *The figures are numbered incorrectly in the SB.*

The numbering has been corrected.

Specific Comments:

1. *The SB (page 26 – Impacts to Undeveloped Areas) discusses a meeting with the Army Corps of Engineers (ACOE), EPA, and the WDNR "to discuss permit requirements and how to minimize the wetlands impacts. Following these discussions, Ansul will submit a proposal to US EPA (for approval) that meets the wetlands requirements of ACOE and the WDNR, as well the clean-up goals established for the site. The proposal must be submitted within 60 days following the meeting with the ACOE." Ansul has met at the facility with ACOE and WDNR representatives to discuss the wetlands; EPA was invited but could not attend. Ansul will continue to keep EPA informed about progress obtaining the wetland permit and any required wetland mitigation will be included in either the Phase II Corrective Measures Work Plan or in a separate Technical Memorandum if the permit is not obtained prior to submittal of the Phase II Work Plan. Ansul requests that the reference to the proposal related to wetlands not be included in the final SB.*

Ansul's proposal to keep the EPA informed about progress in obtaining the wetland permit and any required wetland mitigation will be included in either the Phase II Corrective Measures Work Plan or in a separate Technical Memorandum.

2. *The selected remedy is "Cap and Contain with Hydraulic Control". Ansul proposes to clarify that the "Cap" portion of this remedy does not refer to a full cap of the Manufacturing and Wetland Areas. The new areas to be capped are those with exposed surface soil with arsenic concentrations equal to or exceeding 32 ppm. Other areas at the facility will not be capped.*

We agree that the areas to be capped are only those with exposed surface soil where arsenic concentrations are equal to or exceed 32 ppm.

3. *Page3, 1st paragraph, 2nd sentence: The reference to a Data Summary Report (2002) should be changed to the Summary of Findings Report – 1974-2000 (URS, 2001).*

We acknowledge the correct title.

4. *Page 4, 2nd paragraph, 1st sentence: Ansul proposes to add "extract and" to the sentence. The revised sentence would be: "With current technologies it would be extremely difficult to extract and treat the deep groundwater at Ansul having very high arsenic concentrations."*

We acknowledge that groundwater would need to be extracted before being treated.

5. *Page 7, 4th paragraph: The groundwater gradient control trench was not used to remove groundwater; it was constructed to reduce the horizontal groundwater gradient in that area of the facility. Vertical groundwater recovery wells were installed around*

the Salt Vault, which were used to extract the 16 million gallons of groundwater.

We acknowledge the intent of the trench was to reduce horizontal groundwater gradients in that area.

6. *Page 8, 2nd paragraph, last sentence: One hundred percent of the former Salt Vault and former Eighth Street Slip surfaces are capped, not 90% as indicated in the SB. Also, an additional interim measure included the abandonment of the groundwater interceptor trench. This interim measures activity is not identified in the SB.*

We acknowledge that 100 per cent of the former Eighth Street Slip is capped and the additional interim measure was completed.

7. *Page 11, 2nd paragraph: the reference to the "Natural Area" is not illustrated on Figure 1.*

We acknowledge the omission. The "Natural Area" is located just to the east of the Eighth Street Slip.

8. *Page 12, 1st paragraph, 1st sentence: The SB states that "arsenic concentrations are in excess of 12,000 ppm" whereas Table 1 on page 8 states that 11,000 ppm is the maximum value of arsenic in river sediments.*

Historic concentrations were in excess of 12,000 ppm. Table 1 was a "selected" value measured more recently.

9. *Page 15, 1st paragraph (including other references to this duration): Ansul requests 180 days rather than 120 days for the preparation of the IC Plans for the Manufacturing and Wetland Areas and the Menominee River.*

Upon further review and consideration the EPA has determined the IC Plan is not required but rather IC's should be put in place within one year of the effective date of the Order, as previously stated in General Comment #4.

10. *Page 15, 2nd paragraph, last sentence: Ansul requests removing the statement "and implement the". It is uncertain that new technologies can be implemented that have not been identified or tested as the field scale. If new technologies are available they should be evaluated and submitted to the agency for consideration, then the feasibility of technology implementation should be discussed.*

We disagree with removing the words "and implement the". The agencies recognize that the new technologies would need to be evaluated and tested prior to implementation.

11. *Page 17, Section 5.3, last paragraph: Change "one to two years" to "two to three years" for appropriate monitoring after construction of the containment barrier. This will allow adequate time for effective remedy installation and monitoring.*

We believe the time period should remain at one to two years. See also General Comment #6.

12. *Page 18, 6th sentence: Add "remediation" at the end of the statement "years after completion of the sediment".*

We acknowledge that adding remediation to the end of the sentence would more fully describe the process.

13. *Page 18, 7th sentence: Add "after barrier construction" to the end of the sentence. This time allotment is needed to ensure the river is adequately addressed.*

We believe Ansul should provide a management plan in conjunction with the development of the barrier wall. The plan should outline different path-forward scenarios, depending on the results of the barrier wall monitoring. It is of the utmost importance that an approved sediment management plan is in place well before the completion of the barrier wall monitoring to allow for (dredge) site staging and construction.

14. *Page 20, 1st paragraph, 1st sentence: There are no hydraulic control mechanisms in place for the interim measures at the former Salt Vault and Eighth Street Slip areas. Only Cap and Contain mechanisms were constructed during interim measures construction activities.*

We acknowledge this point.

15. *Page 20, 1st paragraph: The paragraph states: "It should be noted that arsenic is poisonous to most plant life;" Ansul suggests that this statement be changed to: "It should be noted that arsenic can be poisonous to most plant life at concentrations above naturally occurring background concentrations;"*

We acknowledge this point.

16. *Page 29, Item 2, last sentence: Add "If these targets are not attained within 10 years after final dredging then some other…" This will be required to allow for proper evaluation of future technologies to address potential residual impacts in the river.*

The addition is acceptable.

17. *Page 29, Item 5: Replace 1 year with "within 2 to 3 years" to allow for proper consideration and evaluation of a sediment contingency plan to address potential river sediment residuals. Some analysis may be required.*

If monitored natural recovery does not reduce arsenic concentrations to 20 ppm by year 10 then EPA will require Ansul to implement dredging as the contingency plan. One

year should be sufficient to get the necessary permits and a second year to complete the dredging.

18. *Section 4.3, 1st paragraph: The SB states: "average residual concentration of 20 mg/kg of arsenic would be protective of life in the river". It should be noted that the 20 mg/kg is based on a surface weighted average concentration or SWAC, and not an arithmetic average.*

We do not see a need to make this change. Ansul is required to submit an averaging proposal which may include a SWAC method for review and approval by the Agencies. The Statement of Basis is clear and allows Ansul to submit a plan for averaging.

19. *Section 4.3, 2nd paragraph: The SB should refer to the bioactive zone as the upper 0.5 feet rather than 1 foot.*

We believe the more conservative value of 1.0 foot is appropriate unless Ansul can provide the Agencies with clear evidence as to why the bioactive zone should be 0.5 feet. A more comprehensive or compelling discussion of fate and transport would be required to support a shallower depth at this stage.

20. *Section 4.3, last paragraph: An average of 0.6 ppm arsenic in fish is incorrect and the statement that exposure from eating fish exceeded 10E-5 is also incorrect. The fish studies performed by Ansul indicated that the whole body concentrations of arsenic were <0.25 ppm. In WDNR studies only two fish had detectable levels of arsenic; one was 0.5 ppm and the other 0.6 ppm. There were only 2 fish with detectable arsenic concentrations out of about 40 fish sampled. Ansul's results for the fish ingestion exposure scenario in the Human Health Risk Assessment were an HI < 1 (0.006) and CR < 10E-6 (8E10E-7).*

EPA chose an average of 0.6 ppm for fish in the human health risk evaluation based on the composite of skin on fillets from 5 rock bass collected in the Menominee River in 1989 down river of the Ansul facility. Fillet from one lake sturgeon had a reported concentration of 0.5 mg/kg or just at the detection level. Ansul claims that in DNR studies, only 2 fish were found with detectable concentrations out of a total of 40 fish sampled. It should be noted that a review of the fish collected on the Menominee River by WDNR's fish contaminant monitoring program in the years from 1977 to 1990 indicated fish had detectable arsenic concentrations in the later years when lower detection were achieved (0.5 mg/kg compared to 2.0 mg/kg in earlier years). An average concentration of 0.6 ppm arsenic in fish has also been considered a reasonable exposure point concentration by the Wisconsin Department of Health and Family Services in its health consultation on health risks associated with arsenic in fish from Menominee River. Please refer to table 2 of the document that lists individual fish samples with highest arsenic concentration. The health consultation document can be viewed at http://www.atsdr.cdc.gov/HAC/pha/AnsulChemical/Ansul-TycoSafetyProductsHC051506.pdf.

21. *Section 5.3: It should be noted that only sediment that is greater than 50 ppm in the top two feet of sediment or to a depth equivalent to one foot below the authorized navigational channel depth, whichever is deeper will be removed. If there is sediment below these depths a 0.5' layer of sand will be placed upon the sediment to ensure that surface sediments remain <50 ppm and to encourage recruitment of the benthic community.*

We believe sediment with arsenic concentrations greater than or equal to 50 ppm should be dredged irrespective of the depth it is found. If those concentrations exist only in the top two feet of sediment, then those two feet should be removed.