

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

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NAS WILLOW GROVE
5090.3a

SUBJECT: NASJRB Willow Grove
Site 1 Soils - Risk Assessment Evaluation
(Appendix J - April 1998)

FROM: Linda R. Watson, Toxicologist
Technical Support Section (3HS41)

TO: Lisa Bradford, RPM
Federal Facilities Section (3HS13)

DATE May 10, 2005

Based upon my June 17, 2002 comments, it was concluded the risk assessment results could not be verified since the RI report (RI for Site 5, February 2002) did not include Appendix J. During our March 16, 2005 meeting with the Navy, Appendix J was provided to me for risk result verification. I have completed this review and provide the following comments and recommendation for your consideration.

The soil "Surface Area" (SA) value for the child resident (1-6 years, SA-2728 cm²), child trespasser and recreational user (3-8 years, SA-2404 cm²) was provided to me by Lisa Yeutter (Navy Risk Assessor) on 4/28/05. Since some of the toxicity values used to calculate risk have since been updated, risk was revised to reflect these changes. The risk results changes were minimal, if at all, for all receptors. Risk are presented for the adult and child resident and occupational worker exposed to surface soil since there was a significant increase in risk (primarily driven by dieldrin). For groundwater, only the adult and child resident (lifetime) are presented since these receptors are typically the most conservative receptors evaluated (lifetime risk). In addition, the inhalation risk results were recalculated using EPA's *Soil Screening Guidance (SSL)*, May 1996. A Particulate Emission Factor (PEF) of 1.32E+09 was used for inorganics and chemical specific volatilization factors (VF) were derived for the contaminants of potential concern (COPC).

The following are the final risk results for the adult and child resident (lifetime risk) and occupational worker (surface soil only) based on the media of concerns at Site 1:

Surface Soil - Adult and Child Resident (Lifetime)

Results include combined risk from ingestion, dermal, and inhalation (adult only).

Residential child SA value - 2728 cm².

Toxicity values were taken from EPA's most recent RBC Table (dated April 7, 2005).

<u>Receptor</u>	<u>Old Hazard Index</u>	<u>New Hazard Index</u>	<u>Old Cancer Risk</u>	<u>New Cancer Risk</u>
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Adult Resident	3.7E-01	9.8E+00	-	3.0E-03
Child Resident	2.3E+00	4.9E+01	-	3.5E-03
Lifetime Resident	-	-	4.3E-04	6.5E-03

*The carcinogenic risk is primarily driven by dieldrin and PCB's (total all) and the non-carcinogenic risk is primarily being driven by dieldrin.

*Please note: PCBs are no longer evaluated as total PCB's but instead, are evaluated based on the specific PCB congeners (Aroclors).

Surface Soil - Adolescent and Adult Trespasser, Recreational Child and Excavation Worker

The risk results for the Adolescent and Adult Trespasser, Recreational Child and Excavation Worker is not presented since the newly calculated results did not cause any significant risk changes.

Surface Soil - Occupational Worker

<u>Receptor</u>	<u>Old Hazard Index</u>	<u>New Hazard Index</u>	<u>Old Cancer Risk</u>	<u>New Cancer Risk</u>
Occupational Worker	1.9E-01	6.22E+00	1.2E-04	1.8E-03

*Risk (non-cancer and cancer) is primarily driven by dieldrin.

Subsurface Soil

No significant risk result changes therefore, results are not provided.

Sediment

No significant risk result changes therefore, results are not provided.

Groundwater - Adult and Child Resident (Lifetime)

<u>Receptor</u>	<u>Old Hazard Index</u>	<u>New Hazard Index</u>	<u>Old Cancer Risk</u>	<u>New Cancer Risk</u>
Adult Resident	1.9	1.8 (old TCE tox) 2.9 (new TCE tox)	-	8.9E-05 (old TCE) 1.4E-04 (new TCE)
Child Resident	3.7	4.5 (old TCE tox) 6.9 (new TCE tox)	-	5.2E-05 (old TCE) 8.0E-05 (new TCE)
Lifetime	-	-	3.7E-04	1.4E-04 (old)

Resident

TCE)
2.2E-04 (new
TCE)

*Risk is primarily driven by trichloroethylene (TCE) (non-cancer and cancer) and manganese (non-cancer).

**Risk was calculated using both the old (RfD - 6.0E-03, CSF-1.1E-02) and new (RfD - 3E-04, CSF - 4E-01) TCE toxicity values, noted above.

Conclusion

Based upon the newly calculated surface soil risk results (pre-PCB removal soil), PCB's (total all) and dieldrin are the primary COC's for residential receptors and occupational workers exposed to surface soil.

For groundwater, trichloroethylene (TCE) continue to drive non-cancer and cancer risk with manganese contributing to non-cancer risk.

Overall, the newly calculated risk results do not offer any significant changes, with the exception of risk from dieldrin in surface soil (cancer and non-cancer) and manganese in groundwater. Therefore, I recommend this site continue with the remedial actions necessary for surface soil and groundwater clean up.

If you have any questions regarding these calculations and/or recommendations, please contact me at (X3116).

cc: Eric Johnson