

Health Consultation

Review of
Environmental Sampling Data
at the
National Welding and Manufacturing Site
Hartford County
Newington, Connecticut

CERCLIS Number: CTD 001155167

August 22, 1996

Prepared by
Connecticut Department of Public Health
Under Cooperative Agreement
With
The Agency For Toxic Substances and Disease Registry

The conclusions and recommendations in this health consultation are based on the data and information made available to the Connecticut Department of Public Health and the Agency for Toxic Substances and Disease Registry. The Connecticut Department of Public Health and the Agency for Toxic Substances and Disease Registry will incorporate additional information if it becomes available. The incorporation of additional data could change the conclusions and recommendations listed in this document.

BACKGROUND AND STATEMENT OF ISSUES

On March 13, 1996, the U.S. Environmental Protection Agency (EPA) requested that [1] the Agency for Toxic Substances and Disease Registry (ATSDR) examine the report entitled: "Final Site Inspection Report for National Welding and Manufacturing, Newington, Connecticut." Subsequent to that request, on July 3, 1996, the EPA requested a review of another report entitled: "Removal Program Preliminary Assessment-Site Investigation Report for the National Welding and Manufacturing Site Newington, Connecticut." [2]. The purpose of this Health Consultation is to determine whether contamination present on-site (soil, sediment, surface water, storage drums, and debris), pose a public health chemical and/or physical hazard.

The National Welding Property is located in Newington, Hartford County, Connecticut. The property comprises two parcels. The combined area is 14.2 acres. The first parcel is nearly 3.9 acres, and contains two buildings: the currently inactive National Welding main building (referred to as building number 1), and a second building (referred to as building number 2). The second parcel is undeveloped and consists of 10.3 acres [3]. The nearest residence is about 800 feet northwest of the property. Adjacent to the nearest residence is a former pond/lagoon area which has been filled. This area was associated with the site, and now is physically located outside the current site boundaries. This former lagoon is less than 100 yards from the nearest residence. West of the site is a section of wetlands, an intermittent brook, and Piper Brook.

The National Welding facility was used as a metal machining, tooling and fabricating plant from 1941 until January of 1994. The processes conducted on the property include the following: degreasing, drilling, fabricating, heat treating, milling, painting, sand blasting, steam cleaning, turning, welding, and wet and dry grinding, of metal parts [3].

During the operational history of the National Welding the following activities occurred for an undetermined period of time[3]:

- approximately 600 gallons per day of oily wastewater from steam cleaning operations were generated and discharged into an unnamed stream;
- approximately 500 gallons per day of metal cutting wastewater were discharged into a ditch;
- approximately 25 drums of cutting oils per year was spread on the driveway as a dust inhibitor.

An emergency incident report from 1991 indicated that an unknown quantity of fuel oil number 2 was released from leaking underground ground storage tanks [3].

National Welding generated wastes including: trichloroethane, methyl ethyl ketone (MEK), paint thinner, and waste oils. These were either mixed with metal scraps, disposed of in general trash, or flushed down a pipe leading to a small pond behind the main building. This particular practice was conducted for nearly 40 years (since 1941) [3].

Vehicular access to the property is restricted by two wire cable gates located on the southwest corner of the property along the entrance to the parking lot and the driveway on the west side of the main building [3]. There are no fences or other barriers present that restrict trespassers or vehicular traffic onto the property from other locations. Located to the north and northwest of the property are a large commercial supermarket and a strip mall. The supermarket and strip mall are approximately 800 feet from the site. There about 7,666 people living within one mile of the property. There are no day-care facilities or schools located within 200 feet of the property. The nearest school is 0.8 miles southwest of the site. There are two private drinking water wells located 0.5 miles from the site, and two public drinking water wells located approximately 2 miles from the site.

The National Welding facility is currently inactive. The second building is leased by two occupants. One occupant is a construction-related company which is involved with the following activities: construction, excavation, and paving. The second occupant conducts tank removal and metal salvage operations. Six full-time workers are employed by the two on-site occupants [3].

DISCUSSION

I. Physical Site Conditions

During a site visit by WESTON personnel on April 8, 1996, the following observations were made [2].

- Inside building number 1 were about ten vehicles, five 55-gallon drums, two smaller capacity drums, and numerous covered 5-gallon buckets labeled as paint thinner. The vehicles were stored near several unprotected series of live electrical service devices. Several of these live wires were lying on the floor near a puddle of water. This represents a potential explosion hazard. There were several uncovered concrete pits filled with petroleum-like compounds located on the building's floor. These pits may be up to five feet deep. This represents a physical hazard to trespassers who may accidentally fall in the pits. One 5-gallon bucket was labeled as containing transformer oil. There was also one capacitor labeled "pyrenol" within this building [2].

- There were approximately ten rusted 55-gallon drums located in northern and western sections of the site near building number 1. Two of these drums had a black tar-like substance on their exterior. The remaining eight were either empty or filled with what appeared to be concrete. Eight large propane cylinders were observed north of building number 1. Along the eastern border of building number 2 there were several 5-gallon buckets containing suspected waste oil. On the northern portion of the property were several piles of debris. One of these piles contained pipe and pipe fittings parts that were suspected asbestos containing materials. A second debris pile contained creosote soaked wooden blocks, and a third pile contained metal shavings. Two underground storage tanks (2,000-gallon and <2,000-gallon capacity each), previously unearthed, were noted in the northern and western portions of the property respectively. The larger tank contained a solid material. West of building number 2 were three kilns lined with potentially asbestos containing materials. Discarded mechanical and automotive parts were noted throughout the north, west, and east of building number 1. Along the northern exterior of building number 1 was a pile of fine dust-like material located beneath a baghouse/dust collector system [2].

II. Environmental Media: Soil, Sediment, Dust, and Biota

No samples were obtained from the former pond/lagoon area which has been associated with the site, and located adjacent to the nearest residence.

Soil Samples

On August 10, 1994, WESTON/ARCS collected ten soil samples. Nine of the ten samples were grab samples, and one was a three hole composite. The sample depths ranged from 0.0-0.2 feet through 0.5 - 1.5 feet.

The samples were collected from potential source areas located throughout the property. The soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides and polychlorinated biphenyls (PCBs), total metals, and cyanide. There were no VOCs, PCBs, or non-polynuclear aromatic hydrocarbon SVOCs detected above the respective comparison values¹. There were three metals detected above health comparison values (antimony, nickel, and vanadium). Two metals were detected in only one sample. Table 1 lists the maximum concentration of metals detected in the soil and their respective health comparison values.

¹ Comparison values are not used as indicators of levels above which adverse health effects will occur. Rather, they are used as screening values, exceedences of which indicate an additional investigation of that compound is warranted.

Table 1.
Metals Detected in Soil
National Welding and Manufacturing Site
August 1994

Chemical	Maximum Concentration ppm	Comparison Value ppm	Value Source	Soil Depth in Feet
Antimony	227	20	RMEG-Child	0.0-0.2
Nickel	1,410	1,000	RMEG-Child	0.5-1.5
Vanadium	302	200	EMEG-Child	0.0-0.2

EMEG-Child Environmental Media Evaluation Guideline for children
ppm parts per million
RMEG-Child Reference Dose Media Evaluation Guideline for children

The soil contained numerous polynuclear aromatic hydrocarbons (PAHs). Sample location SS-08 contained the highest concentrations of PAHs. This location is in the area where metal scrap piles are present, and is the sample location closest to the supermarket. Table 2 lists the PAHs that were identified above health comparison values stratified by their carcinogenic classification by the EPA. Table 2 also includes a value which represents the summation of all PAHs for the non-carcinogenic and carcinogenic classifications. These maximum values were used in all subsequent risk estimation calculations.

Table 2.
PAHs Detected in Soil
National Welding and Manufacturing Site
August 1994

ID	Chemical	Concentration ppm	Soil Depth in Feet	EPA Group	Comparison Value ppm	Value Source
ss-08	Benzo(ghi)perylene	960	0.0-0.2	not classified	#	#
ss-08	Naphthalene	44	0.0-0.2	not classified	#	#
ss-08	Pyrene	2,500	0.0-0.2	not classified	2,000	RMEG-CHILD
Total non-carcinogenic PAHs		3,504				
ss-08	Benzo(a)pyrene	980	0.0-0.2	B2	0.1	CREG
ss-08	Benzo(b)fluoranthene	1,300	0.0-0.2	B2	#	#
ss-08	Benzo(k)fluoranthene	330	0.0-0.2	B2	#	#
Total carcinogenic PAHs		2,610				

There are no health comparison values for these compounds
B2 Probable human carcinogen
CREG Cancer Risk Evaluation Guideline
ppm parts per million
RMEG-Child Reference Dose Media Evaluation Guideline for children

Sediment Samples

On August 10, 1994, WESTON/ARCS collected seven sediment samples. The sediment samples were obtained at depths from 0.1 to 1 foot. The samples were collected from an unnamed intermittent brook, Piper Brook, and wetlands adjacent to the Piper Brook. The sediment samples were analyzed for VOCs, SVOCs, pesticides, PCBs, total metals, and cyanide. Table 3 lists the only contaminant detected in the sediment above the health comparison value.

Table 3
Contaminant Detected in Sediment
National Welding and Manufacturing Site
August 1994

Chemical	Concentration ppm	Comparison Value ppm	Source	Soil Depth in Feet
Aroclor 1260	4.1	1	EMEG-Child	0.2-0.5

EMEG-Child Environmental Media Evaluation Guideline for children.
ppm parts per million

The sediment contained numerous PAHs. Sample location SD-06 contained the highest concentrations of PAHs. This location was from the Piper Brook parallel to the soil sample which contained the highest contaminants. Table 4 lists the PAHs that were identified above health comparison values, stratified by their carcinogenic classification by the EPA. Table 4 also includes a value which represents the summation of all PAHs for the carcinogenic classifications. The summation of the maximum values were used in all subsequent risk estimation calculations.

Table 4.
Concentrations of PAHs in Sediment Samples Located in the Piper Brook Adjacent to the
National Welding and Manufacturing Site
August 1994

ID	Chemical	Concentration ppm	Soil Depth in Feet	EPA Group	Comparison Value ppm	Source
sd-06	Benzo(ghi)perylene	5.5	0.2-0.5	not classified	#	#
	Total non-carcinogenic PAHs	5.5				
sd-06	Benzo(a)pyrene	7	0.2-0.5	B2	0.1	CREG
sd-06	Benzo(k)fluoranthene	2.2	0.2-0.5	B2	#	#
sd-06	Benzo(b)fluoranthene	8.7	0.2-0.5	B2	#	#
	Total carcinogenic PAHs	17.9				

There are no health comparison values for these compounds
B2 Probable human carcinogen
CREG Cancer Risk Evaluation Guideline
ppm parts per million

Surface Water Samples

On August 10, 1994, WESTON/ARCS collected five surface water samples from areas along the Piper Brook, including wetland areas, and upstream and down stream areas from the probable point of entry from the site to the Brook. The surface water samples were analyzed for VOCs, SVOCs, pesticides, PCBs, total metals, and cyanide. No contaminants were detected above health comparison values.

Sampling of Liquid from Storage Drums Within Building Number 1

On April 8, 1996, members of WESTON collected four drum liquid samples from within building number 1. The liquid samples were obtained from four containers (two 55-gallons drums, one 30-gallon drum, one 5-gallon can). These samples were analyzed for PCBs, VOCs, and oil identification. No PCBs were detected in the liquid sampled from the storage containers. The oil of one drum was tentatively identified as axle grease and kerosene. Four VOCs were detected in the liquid sampled from two storage drums. Methylene chloride was detected at the highest concentration of 460,000 ppm. Table 5 lists the maximum contaminant concentrations of each VOC.

Table 5
 Maximum Contaminant Concentrations Detected
 in Liquid Sampled From Storage Drums Within Building #1
 National Welding and Manufacturing Site
 April 8, 1996

Chemical	Concentration ppm
Ethyl Benzene	200
Methylene Chloride	460,000
Tetrachloroethylene	11
Toluene	38,000

ppm parts per million

Sampling of Solids for Asbestos Outside Building Number 1

On April 8, 1996, WESTON collected three samples of solids from the three kilns located outside building number 1. These samples were analyzed for asbestos. Table 6 lists the results from the sampling of potentially asbestos containing materials from the three kilns. Only one kiln contained asbestos, the two other kilns contained non-asbestos mineral wool.

Table 6
 Asbestos Identification from Solid Samples Collected from
 Three Kilns at National Welding and Manufacturing Site
 April 8, 1996

Kiln	Asbestos		Non-asbestos
	Amosite	Chrysotile	Mineral wool
1	5%	50%	not indicated
2	0	0	99%
3	0	0	99%

Sampling of Dust from Beneath the Baghouse/Dust Collector System Outside Building Number 1

On April 8, 1996, WESTON collected one dust sample from a dust pile located beneath a baghouse/dust collection system located by the exterior northern wall of building number 1. This sample was analyzed for metals. Chromium was the only metal detected above the health comparison value. Table 7 lists the concentration of this metal detected in the dust and the associated health comparison value.

Table 7
Metal Sampling from Dust Pile
National Welding and Manufacturing Site
April 8, 1996

Chemical	Concentration ppm	Comparison ppm	Value Source
Chromium	1,900	60	CREG#

The chromium (VI) health comparison value was used.

CREG Cancer Risk Evaluation Guideline

ppm parts per million

Toxicological Evaluation

The potential exists for ingestion and dermal exposures to contaminated soils for persons who trespass on the National Welding & Manufacturing Site. Inhalation of airborne soil particles is a possible route of exposure, however, the CT DPH lacks sufficient information to characterize this exposure scenario. The exposure pathways examined include the incidental ingestion of contaminated soil (200 mg²), and the dermal absorption of contaminants from soil and sediment adhering to the skin. The exposure duration used for contaminated soil was ten days per year for eight years. The Newington Planning Board indicated that boating and swimming are not likely to occur in the Piper Brook [3]. A representative of the Newington Health Department indicated that children probably fish recreationally [4]. It is not known whether the fish are eaten. Since the Piper Brook may be used for recreational fishing, the exposure duration used for the contaminated sediment was 30 days.

Soil located on the National Welding & Manufacturing Site is contaminated with carcinogenic PAHs that pose a low increased risk of developing cancer among children who contact the contaminated soil. The CT DPH used the following assumptions for this estimation: a 40 kg child is exposed for 10 days a year for three years (since the facility was closed), consumes 200 mg of soil per day, and only their hands are in contact with the soil. The CT DPH assumes that 6 percent of the contacted PAHs in the soil are absorbed into the body from the skin.

A toxicological assessment for each contaminant present in the soil and sediment above health comparison values is presented in the appendix.

Chromium (unspecified type), was detected in the dust pile located beneath a baghouse/dust collection system located by the exterior northern wall of building number 1. Children who come in contact with this dust may be at increased risk of developing non-cancerous health effects possibly including skin irritation and contact dermatitis. Inhalation of airborne dust particles is a possible route of exposure, however, the CT DPH lacks sufficient information to characterize this exposure scenario.

The metals detected in the contaminated soil are below a level of concern.

Sediment located in the Piper Brook adjacent to the National Welding & Manufacturing Site is contaminated with aroclor 1260, a congener of PCB, and carcinogenic PAHs, that pose a low increased risk of developing cancer among children who contact the contaminated sediment. The CT DPH used the following assumptions for this estimation: a 10 kg child is exposed for 30 days per year for eight years, consumes 200 mg of sediment per day, and their hands, arms, and legs are in contact with the sediment. The CT DPH assumes that 6 percent of the contacted aroclor 1260 in the sediment is absorbed into the body from the skin. Whether or not PCBs are affecting PCB levels in fish in the Piper Brook is not known at this time, since there is no fish sampling data available.

The levels of contaminants detected in the surface water do not pose a carcinogenic or non-carcinogenic risk to children who may contact the surface water.

²This value represents an estimated ingestion rate for a child.

Conclusions

The National Welding and Manufacturing Site represents a public health hazard due to chemical and physical hazards present on site. The chemical and physical hazards which lead to this conclusion category are listed below.

1. The interior of building number 1 contains a potential explosion hazard due to the storage of methylene chloride and live electrical wires on the wet floor of this building.
2. The interior of building number 1 contains several uncovered concrete pits (potentially five feet deep) containing a petroleum-like liquid. This represents a physical hazard.
3. Chromium was detected in the dust pile located beneath a baghouse/dust collection system located by the exterior northern wall of building number 1. Children who come in contact with this dust may be at increased risk of developing non-cancerous health effects possibly including skin irritation and contact dermatitis.
4. Soil located on the National Welding & Manufacturing Site is contaminated with carcinogenic PAHs. Sediment located in the Piper Brook adjacent to the National Welding & Manufacturing Site is contaminated with aroclor 1260, a congener of PCB, and carcinogenic PAHs. Since this site is near a shopping area, and access is not restricted, the exposure scenario of a child trespasser is probable. Additionally, recreational fishing reportedly occurs along the Piper Brook, and a child engaged in such activities may therefore become exposed to the contaminated sediment. Children who contact contaminated soil on the National Welding & Manufacturing Site are at low increased risk of developing cancer. Children who contact the contaminated sediment in the adjacent Piper Brook, are at a low increased risk of developing cancer.
5. The National Welding & Manufacturing Site contains numerous accessible storage drums (containing waste oil and fuel oil), that present a public health hazard to children who may play on or near them.
6. The National Welding & Manufacturing Site contains at least one known asbestos source from an abandoned kiln located outside of building 1.
7. No samples were obtained from the former pond/lagoon area which has been associated with the site, and maybe located within 100 yards of the nearest residence.
8. The surface water sampling from Piper Brook indicate that there were no contaminants above health comparison values.
9. The CT DPH does not know at this time whether or not the PCB detected in the sediment of Piper Brook is affecting the PCB levels in Piper Brook fish.
10. The complete extent of site-related contamination has not been determined.

Recommendations.

1. Restrict access to the interior of building number 1.
2. Eliminate the potential explosion/fire hazard inside building number 1.
3. Restrict access to the concrete pits inside building number 1.
4. Restrict access to the contaminated soil located throughout the site.
5. Restrict access to the dust pile located beneath a baghouse/dust collection system located by the exterior northern wall of building number 1.
6. Restrict access to the storage drums located throughout the site.
7. Restrict access to the asbestos-containing abandoned kiln located outside of building number 1.
8. Restrict access to the contaminated sediment located in the Piper Brook adjacent to the National Welding Manufacturing site.
9. Collect surface (0-3 inches) and subsurface soil samples from the former pond/lagoon area located off-site, which has been associated with the site, and maybe within 100 yards of the nearest residence. Analyze these soil samples for VOCs, SVOCs, metals, and PCBs. Provide these sampling results to the CT DPH.
10. Restrict access to the former pond/lagoon area located off-site until soil sampling results (from recommendation number 9) indicate contact with that soil does not represent a public health hazard.
11. The EPA should consider sampling PCB levels in fish caught in the Piper Brook, if the brook is determined to be an active fishery.
12. Determine the extent of site-related contamination; including potential groundwater contamination of drinking water wells.

PREPARER OF HEALTH CONSULTATION

Gary D. Perlman, MPH
Epidemiologist
Environmental Epidemiology and Occupational Health
Connecticut Department of Public Health

ATSDR Regional Representative:

Louise House
EPA Region I

ATSDR Technical Project Officers:

Tina Forrester, Ph.D.
Superfund Site Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

CERTIFICATION

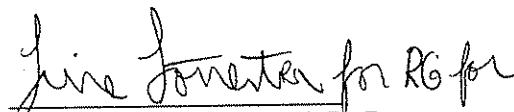
This Health Consultation was prepared by the Connecticut Department of Public Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the Health Consultation was initiated.



Tina Forrester, Ph.D.

Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation, ATSDR, has reviewed this Health Consultation and concurs with its findings.



Sharon Williams-Fleetwood, Ph.D.

Chief, SSAB, DHAC, ATSDR

REFERENCES

1. Correspondence from: Athanasios Hatzopoulos (U.S. EPA Region 1), to: Louise House (ATSDR Regional Representative Region 1) on March 13, 1996.
2. Roy F. Weston. Removal Program Preliminary Assessment/Site Investigation Report for the National Welding and Manufacturing Newington, Connecticut. May 1996.
3. Roy F. Weston. Final Site Inspection Report for National Welding and Manufacturing Newington, Connecticut CERCLIS CTD001155167. September 29, 1995.
4. Personal Communication between: Gary D. Perlman, Epidemiologist (Connecticut Department of Public Health - Division of Environmental Epidemiology and Occupational Health), and Bob Cosgrove (Newington Health Department). April 2, 1996 1:53 pm.
5. U.S. Environmental Protection Agency. Dermal Exposure Assessment: Principles and Applications. Office of Research and Development. January 1992.
6. U.S. Environmental Protection Agency. Drinking Water Regulations and Health Advisories. Office of Water. February 1996.

Appendix -TOXICOLOGICAL EVALUATION

To evaluate health effects, the ATSDR has developed a Minimal Risk Level (MRL) for contaminants commonly detected at hazardous waste sites. The MRL is an estimate of daily human exposure to a contaminant below which non-cancer, adverse health effects are unlikely to occur. MRLs are developed for each route of exposure such as ingestion, inhalation, and dermal absorption and for the length of exposure, such as acute (less than 15 days), intermediate (15 to 364 days), and chronic (greater than 364 days).

The amount of contaminant ingested per body weight was calculated for adults. A similar value was calculated for children. The value for children, however, includes a component known as dermal absorption. The dermal absorption fraction for the metals and PAHs were obtained from the EPA [5]. The dermal absorption component was incorporated into the exposure scenario, because access to the site is unrestricted, and the possibility exists for children to play in the contaminated soil.

Aroclor 1260

Exposure to aroclor 1260 may have occurred in the past, and may be occurring now to persons who contact the contaminated sediment. The principal individual for whom exposure to contaminated soils may be of most concern is the child.

Non-cancerous Effects

Using the highest aroclor 1260 concentration detected (4.1 ppm) the ingestion exposure was calculated for adults (0.000002 mg/kg/day), the combined ingestion-dermal exposure was calculated for children (0.00004 mg/kg/day). The chronic MRL for PCBs is 0.00002 mg/kg/day. Although this value was exceeded for children, non-cancerous health effects are unlikely, as the levels are below levels that would produce health effects. This conclusion was based on the following. A comparison was made to the exposure scenario used in the MRL calculation (greater than 365 days) versus the exposure scenario for the child trespasser (30 days). Based on this the CT DPH concluded that non-cancerous health effects are unlikely for either adults or children who contact the contaminated sediment.

Carcinogenicity Classification:

Aroclor 1260, one congener of polychlorinated biphenyl, has been classified by the EPA as a probable human carcinogen (EPA group B2). The cancer risk calculations indicate that there is no apparent increased risk of developing cancer among children who contact the contaminated sediment.

Antimony

Exposure to antimony may have occurred in the past, and may be occurring now to persons who trespass on the National Welding & Manufacturing Site and contact contaminated soil. The principal individual for whom exposure to contaminated soils may be of most concern is the child.

Non-cancerous Effects

Using the highest antimony concentration detected (227 ppm) the ingestion exposure was calculated for adults (0.0003 mg/kg/day), and the combined ingestion-dermal exposure was calculated for children (0.002 mg/kg/day). Since there is no chronic MRL, the calculated dose from the maximal concentration of 227 ppm has been compared to a reference dose. Using the RfD (0.0004 mg/kg/day) as a comparison, the non-carcinogenic health risks for an adult exposed to antimony in the surface soil at National Welding & Manufacturing Site may be characterized as unlikely. The non-cancerous health risks for a child exposed to antimony in the surface soil at National Welding & Manufacturing Site may be characterized as possible.

Carcinogenicity Classification:

Antimony has not been classified by the EPA as to its carcinogenicity. Consequently, no cancer risk estimations were calculated.

Chromium

Exposure to chromium may have occurred in the past, and may be occurring now to persons who trespass on the National Welding & Manufacturing Site and contact contaminated dust pile. The principal individual for whom exposure to contaminated dust pile may be of most concern is the child.

Non-cancerous Effects

Using the highest chromium concentration detected (1,900 ppm) the ingestion exposure was calculated for adults (0.0027 mg/kg/day), and the combined ingestion-dermal exposure was calculated for children (0.016 mg/kg/day). Since there is no chronic MRL, the calculated dose from the maximal concentration of 1,900 ppm has been compared to a reference dose. Using the RfD (0.005 mg/kg/day) as a comparison, the non-carcinogenic health risks for a child who come in contact with chromium in the dust pile at National Welding & Manufacturing Site may be characterized as possible. The health effects may include skin irritation possibly including contact dermatitis. These risks are characterized as unlikely for adults who come in contact with chromium in the dust pile.

Carcinogenicity Classification:

Chromium(VI) has been classified by the EPA as a known human carcinogen (EPA group A) only via inhalation. However, there is insufficient information to determine cancer risk estimations for individual's exposure through inhalation of chromium in contaminated dust.

Nickel

Exposure to nickel may have occurred in the past, and may be occurring now to persons who trespass on the National Welding & Manufacturing Site and contact contaminated soil. The principal individual for whom exposure to contaminated soils may be of most concern is the child.

Non-cancerous Effects

Using the highest nickel concentration detected (1,410 ppm) the ingestion exposure was calculated for adults (0.002 mg/kg/day), and the combined ingestion-dermal exposure was calculated for children (0.01 mg/kg/day). Since there is no chronic MRL, the calculated dose from the maximal concentration of 1,410 ppm has been compared to a reference dose. Using the RfD (0.02 mg/kg/day) as a comparison the non-carcinogenic health risks for a child or an adult exposed to nickel in the surface soil at National Welding & Manufacturing Site may be characterized as unlikely.

Carcinogenicity Classification:

Nickel has not been classified by the EPA as to its carcinogenicity. Consequently, no cancer risk estimations were calculated.

PAHs

Exposure to non-carcinogenic PAHs may have occurred in the past, and may be occurring now to persons who trespass on the National Welding & Manufacturing Site and have contact with contaminated soil. The principal individual for whom exposure to contaminated soils may be of most concern is the child.

Non-cancerous Effects-Soil

Using the highest combined non-carcinogenic PAH concentration calculated from Table 2 (3,504 ppm) the ingestion exposure was calculated for adults (0.0001 mg/kg/day), and the combined ingestion-dermal exposure was calculated for children (0.003 mg/kg/day). The combined non-carcinogenic PAHs are assumed to be equivalent in toxicity as naphthalene. There is no MRL for naphthalene. The naphthalene RfD is under review by the EPA, however, there is an EPA published value of 0.004 mg/kg/day [6]. Since this value was not exceeded, non-carcinogenic health effects for a child or an adult exposed to non-carcinogenic PAHs in the surface soil at National Welding & Manufacturing Site may be characterized as unlikely.

Non-cancerous Effects-Sediment

Using the highest combined non-carcinogenic PAH concentration calculated from Table 4 (5.5 ppm), the ingestion exposure was calculated for adults (0.0000002 mg/kg/day), and the combined ingestion-dermal exposure was calculated for children (0.000001 mg/kg/day). Since this value does not exceed the RfD for naphthalene (0.004 mg/kg/day), non-carcinogenic health effects for a child or an adult exposed to non-carcinogenic PAHs in the sediment located in the Piper Brook adjacent to the National Welding & Manufacturing Site may be characterized as unlikely.

Cancerous Effects-Soil

Benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene are all classified by the EPA as a probable human carcinogens (EPA group B2). Cancer risk calculations were based on the combined concentration of these three PAHs. The cancer risk estimations indicate that there is a low increased risk of developing cancer among children who contact the contaminated soil. The CT DPH used the following assumptions for this estimation: a 40 kg child is exposed for 10 days a year for three years, consumes 200 mg of soil per day, and their entire hands are in contact with the soil. The CT DPH assumes that 6 percent of the contacted PAHs in the soil are absorbed into the body from the skin.

Cancerous Effects-Sediment

The cancer risk estimations based on the sediment PAH concentrations indicate that there is a low increased risk of developing cancer among children who contact the contaminated sediment.

Vanadium

Exposure to vanadium may have occurred in the past, and may be occurring now to persons who trespass on the National Welding & Manufacturing Site and contact contaminated soil. The principal individual for whom exposure to contaminated soils may be of most concern is the child.

Non-cancerous Effects

Using the highest vanadium concentration detected (302 ppm) the ingestion exposure was calculated for adults (0.0004 mg/kg/day), and the combined ingestion-dermal exposure was calculated for children (0.003 mg/kg/day). Using the intermediate MRL (0.003 mg/kg/day) as a comparison the non-carcinogenic health risks for a child or an adult exposed to vanadium in the surface soil at National Welding & Manufacturing Site may be characterized as unlikely.

Carcinogenicity Classification:

Vanadium has not been classified by the EPA as to its carcinogenicity. Consequently, no cancer risk estimations were calculated.

National Welding and Manufacturing, Newington, CT Site
Map

