

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

Interim Final 2/5/99

**RCRA Corrective Action**

**Environmental Indicator (EI) RCRIS code (CA725)**

**Current Human Exposures Under Control**

**Facility Name:** Kennametal, Inc.  
**Facility Address:** 442 Chalybeate Spring Road  
P.O. Box 161  
Bedford, PA 15522  
**Facility EPA ID #:** PAD 00 439 7683

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

If data are not available skip to #6 and enter "IN" (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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**Facility History**

Kennametal, Inc. is a manufacturer of carbide-tipped steel tools for mining and highway construction applications. The facility contains two distinct manufacturing areas. In Manufacturing Area 1, tungsten carbide powders are ground and pressed into tool tips of various shapes. These tool tips then undergo sintering, honing, blasting and grinding. In Manufacturing Area 2, the steel bodies that hold the tungsten carbide tips are manufactured. The tungsten carbide tips also undergo brazing in this area. Other Manufacturing Area 2 operations include heat treating, annealing, snowplow blade fabrications, washing, rust inhibiting, painting, bucket label printing, packaging, storing and shipping.

Prior to 1981, some wastewaters generated at the facility were treated and released to three lagoons, designated Lagoon Nos. 1, 2 and 3. Lagoon Nos. 1 and 2 were constructed in 1965 and 1970, respectively, and both received heat treat rinse water, paint stripping solution, grinding and cutting fluids, neutralized acidic cleaning solution and washer station wastewater. Lagoon No. 3 was put into service in 1970 and received water-based coolants, neutralized acidic cleaning solution and washer station wastewater until 1981. All three of these lagoons have been closed. Since 1981, Kennametal has treated the above waste streams in its own wastewater treatment plant which discharges to the Bedford municipal sewer system.

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”<sup>1</sup> above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<b>X</b>	___	___	<b>1,1,1-trichlorethane and its degradation products as evidenced by groundwater monitoring program.</b>
Air (indoors) <sup>2</sup>	___	<u>X</u>	___	Groundwater contamination has not migrated off-site. No odors or wet basements reported in on-site structures.
Surface Soil (e.g., <2 ft)	<b>X</b>	___	___	<b>PCB contamination beneath concrete pad west of Lagoon No. 2.</b>
Surface Water	___	<u>X</u>	___	No evidence of release of contaminants to surface water.
Sediment	___	<u>X</u>	___	No evidence of release of contaminants to surface water.
Subsurf. Soil (e.g., >2 ft)	___	<u>X</u>	___	Former lagoons containing hazardous wastes have been clean closed. No other subsurface contamination encountered.
Air (outdoors)	___	<u>X</u>	___	No evidence of release of contaminants to air.

\_\_\_\_\_ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

**X** If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

\_\_\_\_\_ If unknown (for any media) - skip to #6 and enter “IN” status code.

**Rationale and Reference(s):**

**Groundwater:**

Since the early 1980s, more than 30 monitoring wells have been installed at Kennametal to assess the groundwater quality beneath the site. The main contaminants of concern in the groundwater are 1,1,1-Trichloroethane and its degradation products, which are concentrated at two areas on the site: near Former Lagoon No. 3 and west of Former Lagoon No. 2. The highest concentrations of 1,1,1-TCA as of the last few groundwater monitoring events have been in the range of 600 micrograms per liter (ug/l) to 1,000 ug/l. The maximum contaminant level (MCL) for drinking water for 1,1,1-TCA is 200 ug/l.

**Surface and Subsurface Soil:**

When Kennametal decided to no longer use its three impoundments in the early 1980s, the lagoon sludges, lagoon fill/soils, nearby soils and lagoon soil/water mixtures were sampled. In 1985, samples from Lagoon 3 indicated the presence of oily residual waste contamination.

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The upper 6 inches of lagoon material was removed and disposed of in accordance with the State residual waste requirements. This lagoon was clean closed in 1986. Pentachlorophenol (PCP), was detected at significant concentrations in Lagoon Nos. 1 and 2 fill and soil samples. Lagoon Nos. 1 and 2 were clean closed in 1992.

As part of the RCRA Field Investigation (RFI) in 1994, Kennametal installed and sampled 11 soil borings. Boring locations were based mainly on the findings of a soil gas survey conducted in July 1993. The analytical results from the samples collected from the borings indicated that there were no volatile organic compounds (VOCs), semi-VOCs or metals in the surface soil that are attributable to historical Kennametal activities. Polychlorinated biphenyls (PCBs) were detected in three of the 11 surface soil samples at concentrations exceeding the PCB screening criterion. The highest PCB concentrations were detected in samples collected beneath a concrete pad west of Lagoon No. 2.

**Surface Water:**

Surface water sampling was conducted in 1983 in the tributary stream and Dunning Creek. The samples were analyzed for total organic content and total organic halogens. The upstream values for these parameters tended to be equal to or higher than those for downstream locations. Surface water samples collected from five locations as part of the RFI did not exhibit detectable concentrations of volatile organic compounds or semi-volatile organic compounds. All metal detections in the surface water samples were below the screening criteria. There is no evidence to suggest that surface water has been negatively impacted by contamination found on the Kennametal property.

**Sediment:**

Sediment samples were collected from five locations as part of the RFI and analyzed for VOCs, semi-VOCs and metals. No VOCs were detected in any of the samples. Two of the five samples exhibited low concentrations of benzo(a)pyrene (both below the soil screening level for surface soil ingestion).

**Air (indoor):**

There are no residences located within 100 feet of areas of known or suspected soil or groundwater contamination. The two main manufacturing areas at the plant are also located greater than 100 feet away from known areas of contamination. There is no documentation of noticeable odors or wet basements in any of the facility structures.

**Air (outdoor):**

There is no documentation of odor or particulate emission complaints against Kennametal by any of the facility's neighbors in the site files. The State has conducted numerous inspections under the Clean Air Act during the past decade and has found the facility to be in compliance with the air regulations consistently. (Description of Current Conditions, May 27, 1992; Draft RCRA Facility Investigation Report for the Kennametal, Inc. Manufacturing Facility, July 12, 1995; Annual Groundwater Monitoring Program Results - Round 1 thru 7, November 13, 1996 through March 27, 2002)

**Footnotes:**

<sup>1</sup> "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

**Summary Exposure Pathway Evaluation Table**

Potential **Human Receptors** (Under Current Conditions)

<b><u>“Contaminated” Media</u></b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>			<u>No</u>
Air (indoors)	---	---	---				
Soil (surface, e.g., <2 ft)	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
Surface Water	---	---			---	---	---
Sediment	---	---			---	---	---
Soil (subsurface e.g., >2 ft)				---			---
Air (outdoors)	---	---	---	---	---		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“\_\_\_”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

**X** If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

----- If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.

----- If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

**Rationale and Reference(s):**

**Groundwater:**

Since the early 1980s, more than 30 monitoring wells have been installed at Kennametal to assess the groundwater quality beneath the site. The main contaminants of concern in the groundwater are 1,1,1-Trichloroethane and its degradation products, which are concentrated at two areas on the site: near Former Lagoon No. 3 and west of Former Lagoon No. 2. The highest concentrations of 1,1,1-TCA occur in groundwater near Lagoon No. 3 and have been in the range of 600 micrograms per liter (ug/l) to 1,000 ug/l.

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The maximum contaminant level (MCL) for drinking water for 1,1,1-TCA is 200 ug/l. Groundwater has been pumped from wells located in the vicinity of Former Lagoon No. 3 since the mid-1980s. Groundwater that is collected from these wells is treated in a batch-mode air-stripper to remove the VOCs. There is no evidence that suggests that groundwater contamination has ever migrated off-site. Kennametal has a groundwater monitoring program in place to verify that the groundwater contamination is not migrating off-site.

Thirty-five (35) wells were identified within approximately 3/4-mile of the site. All of these wells are either upgradient of the facility or on the opposite side of a tributary to Dunning Creek. In 1984, PADEP sampled three nearby homeowner wells for VOC's; none were detected. In June 1992, EPA collected samples from nine residences located in the vicinity of the site and had them analyzed for VOCs and total metals. With the exception of one sample containing a trace concentration of methylene chloride, no VOCs were detected in the samples. Methylene chloride is a common laboratory contaminant and its detection in the sample can not be attributed to Kennametal operations. The metals levels in the samples were within the normal ranges expected for groundwater in the area.

**Surface Soil:**

All three of the lagoons that had received hazardous wastes have been clean closed under the supervision of PADEP. Therefore, there is no measurable contamination remaining on-site that is associated with the historical lagoon operations. As part of the RCRA Field Investigation (RFI) in 1994, Kennametal installed and sampled 11 soil borings. Boring locations were based mainly on the findings of a soil gas survey conducted in July 1993. The analytical results from the samples collected from the borings indicated that there were no VOCs, semi-VOCs or metals in the surface soil that are attributable to historical Kennametal activities. However, polychlorinated biphenyls (PCBs) were detected in three of the 11 surface soil samples at concentrations exceeding the PCB screening criterion. The highest PCB concentrations were detected in samples collected beneath a concrete pad west of Lagoon No. 2. The concrete pad provides an protective barrier to individuals working or passing by the area of observed contamination. In 1996, as an institutional control, Kennametal recorded in the permanent land records for Bedford County a declaration that indicated that hazardous substances have been identified in some samples of soil collected from a portion of the site. Kennametal has also agreed to limit disturbances of the affected area for as long as it owns the property. (Description of Current Conditions, May 27, 1992; Draft RCRA Facility Investigation Report for the Kennametal, Inc. Manufacturing Facility, July 12, 1995; Annual Groundwater Monitoring Program Results - Round 1 thru 7, November 13, 1996 through March 27, 2002; Kennametal, Inc. Correspondence of July 31, 1996; EPA Correspondence of August 23, 1996)

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

----- If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

----- If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

----- If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s): \_\_\_\_\_

<sup>4</sup> If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

----- If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

----- If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

----- If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s): \_\_\_\_\_

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

**X**    YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Kennametal, Inc.** facility, EPA ID # **PAD 00 439 7683**, located at **442 Chalybeate Spring Road, Bedford, PA 15522** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

\_\_\_\_\_ NO - "Current Human Exposures" are NOT "Under Control."

\_\_\_\_\_ IN - More information is needed to make a determination.

Completed by    (signature) \_\_\_\_\_    Date 04-28-97  
Andrew Clibanoff  
Remedial Project Manager

Supervisor        (signature) \_\_\_\_\_    Date 06-17-02  
Paul Gotthold  
PA Operations Branch Chief  
EPA, Region 3

**Locations where References may be found:**

Facility RCRA Project File  
EPA, Region III  
Waste and Chemicals Management Division  
1650 Arch Street  
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