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:	SKF USA Inc.
Facility Address:	1000 Logan Boulevard, Altoona, PA 16601
Facility EPA ID #:	PAD004344172

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?

  _X_ 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).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] 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)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	x			Groundwater is contaminated with petroleum hydrocarbon and volatile organic compound (VOCs) (April 1993 Conceptual Remediation Design Report prepared by Law Environmental, Albany, New York; May 1993 Supplemental Hydrogeologic Assessment Report prepared by Law Environmental , Pittsburg, PA; June 3, 1994 Former Swarf Press Area Closure Report prepared by Law Environmental, Albany, New York; July 14, 2003 Groundwater Quarterly Report)
Air (indoors)[2]		x		Screened out using the Pennsylvania Land Recycling Program Technical Guidance Manual- SctionIV.A.4.Vapor Intrusion into Buildings from Groundwater and Soil under the Statewide Standard
Surface Soil (e.g., <2 ft)		x		Removed and capped (April 1993 Conceptual Remediation Design Report prepared by Law Environmental, Albany, New York; May 1993 Supplemental Hydrogeologic Assessment Report prepared by Law Environmental , Pittsburg, PA; June 3, 1994 Former Swarf Press Area Closure Report prepared by Law Environmental, Albany, New York)
Surface Water		x		No record of contamination
Sediment		x		No records of contamination
Subsurf. Soil (e.g., >2 ft)		x		Removed and Capped. (April 1993 Conceptual Remediation Design Report prepared by Law Environmental, Albany, New York; May 1993 Supplemental Hydrogeologic Assessment Report prepared by Law Environmental , Pittsburg, PA; June 3, 1994 Former Swarf Press Area Closure Report prepared by Law Environmental, Albany, New York)
Air (outdoors)		x		No records of contamination

Footnotes:

[1] "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).

[2] 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.

____ 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):

Background:

The SKF Altoona facility is a privately owned facility located at 1000 Logan Boulevard in Altoona, Blair County, Pennsylvania. The property occupies a 15.143-acre tract of land and includes an approximate 225,000 square foot structure (housing manufacturing and office space).

The facility is bordered to the north by M&T bank, to the south by an automobile dealership lot and the Penelec property, to the west by Plank road and to the east by Logan Boulevard. Neighboring properties are primarily commercial, with residential areas located to the west of Plank Road and to the east of Logan Boulevard. Topographically, the site is flat with surface drainage generally to the west toward Plank Road.

The building is primarily of slab-on-grade construction with shallow spread footings, with the exception of a limited area equipped with a basement along the northern border of the building. The site has been owned and operated by the SKF Ball Bearings Division since approximately 1951. Before 1951, the site was a shirt factory (June 5, 1991 Environmental Priorities Initiative Preliminary Assessment of SKF Ball Bearing Division prepared by NUS Corporation)

Geologic logs obtained from test borings drilled as part of the soil contamination assessment indicate the overburden penetrated consists primarily of unconsolidated silts and clays with some sand and gravel. The average thickness of the overburden is 12-14 feet. Published geologic data indicate the site is underlained by the Wills Creek Formation which consists of thin, fissile, calcareous, gray shale with thin layers of interbedded limestone near the base and throughout the formation. The formation ranges from 400 - 750 feet in thickness. Groundwater found within the formation is highly mineralized containing 1,000 - 2,500 ppm of dissolved solids largely due to calcium sulfate (gypsum) in the bedrock. These conditions render the aquifer undesirable as a source of drinking water. Based on surface topography and flow direction of surface water expressions, the flow direction in the shallow aquifer is anticipated to be west/southwest through the site. The depth to groundwater beneath the site ranges from 6 to 11 feet below the surface (October 1988 Groundwater Quality Assessment plan prepared for SKF USA by Lancy Environmental Services Company).

In the manufacturing process, machining, heat treating, grinding, honing, and assembly and packaging operations are performed. As a result of these operations, wastes are generated which include waste hydraulic oil, synthetic coolant, cutting oil, machining chips, grinding scrap, spent solvents, and acid. During closure of some of the SWMUs, contamination was discovered at the SKF facility. The contamination consisted primarily of volatile organic compound and petroleum hydrocarbon impacted soil and groundwater.

Two areas were identified as having been impacted by petroleum hydrocarbon and chlorinated solvents, the Former Wastewater Underground Storage Tank Area and the Swarf Press Area. Contaminated soils at these areas were excavated and disposed off-site. The areas were then either re-seeded or paved over. An ongoing groundwater remediation system is operated to treat contaminated groundwater. (January 1991 Underground Storage Tank Closure Report, SKF Industries, Inc. Altoona, PA prepared by Mountain Search, Inc.; June 3, 1994 Former Swarf Press Area Closure Report prepared by Law Environmental)

Groundwater : Groundwater is contaminated with volatile organic compounds including Chloroethane, 1,1-dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, Dichloromethane (methylene chloride), 1,1,1-TCA, TCE, and vinyl chloride at levels above the maximum contaminant levels (MCLs) or the Region III risk based concentrations (RBCs) for Tap water. The concentrations of contaminants and the correspondent MCLs/RBCs are listed as follows:

	EPA Region III RBC (ppb)	MCL (ppb)	Level in wells (ppb)
Chloroethane	3.6		2,400
1,1-dichloroethane	800		4,600
1,2-Dichloroethane		5	6
1,1-Dichloroethene		7	6,800
cis-1,2-Dichloroethene		70	64
Dichloromethane (methylene chloride)		5	60
1,1,1-TCA		200	120,000
TCE		5	760
Vinyl Chloride		2	54

Ongoing groundwater remediation system being performed. Liquid phase petroleum hydrocarbon bailing from MW-3 and RW-1 has been performed monthly since December 1999 and May 2002, respectively (SKF USA, Inc., Altoona, PA Monitoring Well Data - First Quarter 2004 Sampling Report dated April 23, 2004). Quarterly groundwater monitoring has been operated since March 7, 1995. There is no residential drinking water wells within 1/4 mile radius of the facility. Groundwater flow direction is expected to be westwardly, toward Mill Run Creek located approximately 0.25 mile west. Mill Run Creek is not a surface water source of drinking water. The surface water sources of drinking water are Lake Altoona located approximately 2.9 miles west-northwest of the site and Brush Mountain Reservoir located approximately 2.2 miles east-southeast of the site.

Surface Water: No record of contamination. The nearest surface water is Mill Run Creek, located approximately 0.25 mile west and downgradient of the site (July 5, 1991 Environmental Priorities Initiative Preliminary Assessment of SKF Ball Bearing Division prepared by NUS Corporation). The facility had a NPDES permit (from 1990 through 1995) for non-contact cooling water discharge to Mill Run Creek. No cooling water was discharged subsequent to 1992. Contaminated groundwater is discharged to POTW pursuant to a Altoona City Authority Permit Number 200214 effective December 1, 2002. Mill Run Creek is not a surface water source of drinking water

Surface and Subsurface soil: Contaminated soils have been excavated and disposed off-site. The excavated areas were backfilled and were paved over (January 1991 Underground Storage Tank Closure Report, SKF Industries, Inc. Altoona, PA prepared by Mountain Search, Inc.; June 3, 1994 Former Swarf Press Area Closure Report prepared by Law Environmental)

Sediment: No record of releases

Air (Outdoors): No record of releases

Air (indoors) : Current solvent usage is limited to predominantly water-based materials. The Pennsylvania Land Recycling Program Technical Guidance Manual-Section IV.A.4. Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard dated January 24, 2004 is used to evaluate the vapor intrusion to indoor air pathway from groundwater contamination with VOCs underneath the facility for Environmental Indicator determination purpose. In accordance with the Groundwater Indoor Air Quality (IAQ) Decision Matrix for the State Health Standard in the guidance, the receptor location and type of soil are critical. The pathway is only relevant if the inhabited building is proximate to the source (within 100 feet). Further, under the Statewide Health Standard, if separate phase liquid (SPL)is encountered beneath the structure or within 100 feet of the receptor at or above the water table, the matrix should not be used. Additionally, the derived J&E values listed in Table 1 and 2 should not be used if the material below the building is predominantly sand or "sand like" material.

At SKF, SPL found above the water table in RW-1 and MW-3 and is removed from these wells on a monthly basis. However, the SPL has been found to contain alkanes hydrocarbon n-C_9 to n-$C_{32.}$ These alkanes have low vapor pressure and are not volatile and toxic chemicals of concern listed in Table 1 of the EPA Draft Guidance For Evaluating The Vapor Intrusion To Indoor Air Pathway From Groundwater And Soils or the State Guidance. Additionally, the liquid phase is localized to MW-3 and RW-1.

The well logs indicate that the upper five feet is clay in each boring except MW-1. The MW-1 well log shows that clay at 13.7' below land surface, sand and gravel are found above this depth (the Preliminary Hydrogeologic Assessment Report and Follow-up Workplan dated June 5, 1992). The water level is about 10 feet below the surface. MW-1 was sampled in January and March of 1992. Samples were analyzed for VOCs. There are no results over the detection limit (The Supplemental Hydrogeologic Assessment Report dated May 7, 1993 prepared by Law Environmental, Inc. for SKF, Table 8).

The presence of preferential exposure pathway (defined in The Pennsylvania Land Recycling Program Technical Guidance Manual-Section IV.A.4.Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard dated January 24, 2004) within 30 feet of the source also limits the use of the matrix. There is no information indicating existence of preferential pathway within 30 feet of the source at SKF.

The contaminated groundwater is currently treated with a pump and treat system and is monitored quarterly. Contaminants found in the groundwater are chloroethane, chloromethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, dichloromethane, 1,1,1-trichloroethane, trichloroethene, and vinyl chloride. Figure 1 GW IAQ Decision Matrix for the Statewide Health Standard on page 10 of the guidance provides generic evaluation options to determine if a potential pathway for vapor intrusion exists. One of these options is to compare the concentrations of the contaminants in the groundwater to the respective J&E PA default screening levels. If the contaminants concentrations are below the correspondent J&E screening levels and if the groundwater is greater than or equal 5 feet from the receptor, the pathway is determined incomplete and current human exposures is under control with respect to vapor intrusion.

All monitoring wells have a water level of more than 5 feet below ground surface except MW-4 and MW-7. MW-4 has a water level of about 4 feet below the surface and MW-7 has a water level about 2 feet below the surface (the Preliminary Hydrogeologic Assessment Report and Follow-up Workplan dated June 5, 1992). MW-4

and MW-7 were sampled in September 2003. VOCs were not detected in MW-4 sample. With respect to MW-7, except for 1,1-dichloroethane, VOCs were also not detected. However, 1,1-dichloroethane was found just slightly above the detection limit (1,1-dichloroerthane was found at 6 ppb, the respective detection limit is 5 ppb). Additionally, the well is located a distance from the buildings (approximately 25 feet from the SKF building and 100 feet from the M&T bank).

Highest levels of volatile organics found in groundwater underneath SKF in the last 12 quarterly monitorings and the correspondent J&E screening levels identified in the guidance are listed as follows:

	J&E - Residential (ppb)	J&E - nonresidential (ppb)	Level in wells (ppb)
Chloroethane	22,000	37,000	2,400
1,1-dichloroethane	16,000	26,000	4,600
1,2-Dichloroethane	2,800	4,600	6
1,1-Dichloroethene	160,000	220,000	6,800
cis-1,2-Dichloroethene	42,000	59,000	64
Dichloromethane (methylene chloride)	77,000	130,000	60
1,1,1-TCA	NOC	NOC	120,000
TCE	14,000	24,000	760
Vinyl Chloride	1,800	3,000	54

The levels of volatile organics in the groundwater below the J&E values indicate the pathway is incomplete and human exposure to indoor air is under control.

Contaminated soil at the swarf press area was excavated to 3 feet deep. Samples taken at the excavated area was analyzed for volatile organics. The results show volatile organics were found below the EPA Region III residential risk -based concentrations (Former Swarf Press Area Closure Report dated June 3, 1994 prepared by Law Environmental, Albany, NY). Therefore, the assessment of indoor air quality from the vapor intrusion of contaminants in soil into building is not neccessary.

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)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	___no	no___	no___	no___			no_
~~Air (indoors)~~							
~~Soil (surface, e.g., <2 ft)~~							
~~Surface Water~~							
~~Sediment~~							
~~Soil (subsurface e.g., >2~~							
~~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.

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

Rationale and Reference(s):

There is no private drinking water well located with 1/4 mile radius of the facility. A drinking water well survey performed in July 2003 revealed that there was only one property that had a private drinking water well. This property is now connected to a public water supply.

Construction workers may be exposed to contaminated groundwater while working. However, the workers are trained and are protected by their personal safety equipment when performing their work .

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (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):

[4] 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.

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):

6Check 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 SKF USA Inc. facility, EPA ID # PAD004344172, located at 1000 Logan Boulevard, Altoona, PA 16601 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) /s/ Date 7/26/04
(print) Tran Tran
(title) RCRA Project Manager

Supervisor (signature) /s/ Date 7/26/04
(print) Paul Gotthold
(title) Chief, PA Operations Branch
(EPA Region or State) EPA Region 3

Locations where References may be found:

USEPA Region 3
Waste and Chemical Management Division
1650 Arch Street
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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.