Documentation of Environmental Indicator Determination

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: **Omark Caribbean, Inc. (Formely a subsidiary of Oregon Chain Saw)**
Facility Address: **88-90 Street D, Minillas Industrial Park, Bayamon, Puerto Rico**
Facility EPA ID#: **PRD090038092**

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 EIs 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 objectives of the RCRA Corrective Action program, the EIs 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 is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does 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 Determination status codes should remain in the 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).

Facility Information

Site Description and Manufacturing Process: Omark Caribbean Inc. (OC), a subsidiary of Oregon Saw Chain Division, is located in Minillas Industrial Park in Bayamon, Puerto Rico. According to a topography map, the Rio Bayamon is located approximately 500 feet from the facility. The facility is bounded to the northeast by Street E., to the northwest by Banda Fria, Inc., to the south by an unnamed creek enbankment, to the east by Novoa Manufacturing Forms,Inc., and to the west by Street D. The manufacturing operation began on May 3, 1965 and ended on October 4, 1985. Omark manufactured saw chains used in power chain saws to cut trees. The OC facility was also involved in the electroplating and metal finishing processes. Metal parts were stamped, heated, treated, chrome plated, grounded and cleaned. Following these processes, chain part components were assembled and packaged. The OC facility included several departments used in the manufacturing processes: A Tool and Die Department; a Chrome Plating Department; a Chrome Treatment Area; a Punch Press Department; a Heat Treatment Department; an Automatic Assembly Department; Parts Washing Department; a Maintenance Shop and Tool Department; a Ware House; Electrochemical Milling (ECM) Department, Parts Washing; and a Wastewater Treatment Plant (WWTP) located adjacent to the Bayamon River.

Permit History: Omark submitted a Part A application as a treatment and disposal facility (TSDF) and a generator on November 19, 1980 for two (2) regulated units: A hazardous waste container storage area (S01), and a storage tank (T04). A revised Part A application was submitted in December 1985. The facility decided to cease operation in 1985 instead of submitting a required Part B RCRA Permit application. A closure plan was submitted for the container storage area on January 17, 1986 and approved by EPA on December 17, 1988. The Closure plan was public noticed on December 28, 1988. The closure certification (clean closure) was approved by EPA on June 16, 1989. The storage tank was later determined to have protective filer status during the same year.

The EQB issued a national pollutant discharge elimination system permit (NPDES) (PR0001678) to Omark for discharge of wastewater effluent from its WWTP. The EQB's Air Emission Programs issued an Air Emissions permit (PFE-1105850372) to Omark for managing air emissions sources from the fume scrubber.

The hazardous wastes generated from the manufacturing processes were as follows: Trivalent chromium (Cr^{+3}), hexavalent chromium (Cr^{+6}) (F006); Activated charcoal, and spent oils (D001); Chromic hydroxide solution, chrome duct deposits, washwaters, chrome plate resins, ECM duct deposits (D007); Spent 1,1,1-trichloroethane (F001); Still bottoms 1,1,1-trichloroethane (F002); Filter cake from electroplating (F006); Chromic acid solution (U032); Mercury (Hg) liquid metal (U151); reagent 1,1,1-trichloroethane (1,1,1-TCA); washwaters, (U226); and Ferric chloride and Lead (D008).

Site Responsibility and Legal Instrument: Facility was an Interim Status facility. No Order of Consent was signed. Corrective action activities were conducted voluntarily.

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

Summary of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs): Solid Waste Management Units (SWMUs): A RCRA Facility Assessment (RFA) was performed on December 31, 1987, and amended in 1991. The RFA identified three (3) solid waste management units (SWMUs) and the three (3) Areas of concern (AOCs) which are briefly described below. The SWMUs and AOCs are as follows: A Hazardous waste container storage area (SWMU-1), a Chrome Treatment Area (SWMU-2), a Wastewater Treatment plant (WWTP) (SWMU-3), a Chrome Plating Department (AOC-1), a Tool and Die Department (former chrome plating department) (AOC-2), and Automatic Assembly Department (AOC #3). The RFA was approved by EPA on September 25, 1991, Based on the RFA's findings, supported by visual site inspection along with sampling sampling and analyses, it was evident that SWMU-2, SWMU-3, AOC-1, AOC-2, and AOC-3 were contaminated. Therefore, the RFA concluded, and recommended that a RCRA facility investigation (RFI) be performed to fully characterize the site and to determine the extent (vertical and horizontal) of hazardous waste contaminants site wide.

SWMU # 1, Hazardous waste container storage area (CSA): The hazardous waste container storage area had been storing wastes since 1978, and closed on April 19, 1988. This CSA , which is located outside of the main building, consisted of a storage shed, and occupied a total area of 340 square feet. This area had a total storage capacity to contain 100 drums (55-gallons each) and several five-gallon containers. The container storage area floor slab was constructed of reinforced concrete blocks, cemented to the slab and lined with sand cement coating. The hazardous wastes were stored in 55-gallon drums or containers. The hazardous wastes managed were as follow: Spent 1,1,1-trichloroethane, chromic hydroxide, zinc hydroxide, chromic acid, mercury, activated charcoal, spent oils, chrome plate raisins, EMC chrome duct deposits, chromium sulfate, sodium nitrate mixture, and filter cake from electroplating. The filter cake produced by the fliter press was placed in 55-gallon drums for storage in the hazardous waste container storage area and shipped to the CECOS Livingston, Louisiana Hazardous waste Landfill, an authorized hazardous waste landfill.

No releases was reported for this unit, However, an inspection conducted on February 25, 1982 identified 53 unlabeled, and corroded drums containing sludge of chrome hydroxide.

SWMU # 2, Chrome Treatment Area (CTA): The CTA commenced operations in 1970, and ceased to operate on October 4, 1985. The CTA was used to treat wastewaters and residues originating from plating operations, scrubbing solution used for collecting chromic acid fumes in the chrome treatment department, sludges, precipitated chromium slurry, and filter cake produced by the filter press. The chrome treatment area consisted of a total of six (6) rectangular shaped concrete tanks. Three (3) tanks were used as receiving tanks for materials coming from the plating department and for recycle materials, and the remaining three (3) tanks were used to treat chromium. The chromium treatment consisted of the reduction of hexavalent chromium (Cr^{+6}) into trivalent chromium (Cr^{+3}). The treatment used sulfuric acid, sulfur dioxide gas and sodium hydroxide. The wastes generated were as follows: wastewaters and residues originated from the plating operations which were conducted in the chrome plating department; chrome compounds such as chromium hydroxide, chromic acid, and chrome sulfate; scrubbing solution (a scrubber was used for scrubbing the chromic acid fumes collected from the plating tanks) used for collecting chromic acid fumes in the chrome treatment area; sludge, and/or filter cake which contained Cr^{+6}. The precipitated chromium slurries (sludges), which contained Cr^{+6}, were removed from the treatment tanks and pumped to a filter press. The filter cakes produced by the fliter press were placed in 55-gallon drums for storage in the Hazardous Waste Container Storage Area and shipped to the CECOS Livingston, Louisiana Hazardous waste Landfill, an authorized hazardous waste landfill. The treated effluents were sent to an equilization tank and then treated in the Wastewater Treatment Plant (WWTP).

SWMU # 3, Wastewater Treatment Plant (WWTP): The WWTP commenced operations in 1970 and ceased to operate in 1988. This unit is located adjacent to the Bayamon River. The WWTP consisted of ten (10) treatment phases as follows: 1) Equalization, aeration, and oil removal from various intermittent flows of wastewater; 2) A lime treatment for removal of contaminants; 3) Aeration of clarifier feed; 4) Coagulation/flocculation; 5) Clarification by settling; 6) Filtration by sand and anthracite; 7) Carbon adsorption; 8) Final pH adjustment (post neutralization); 9) Sludge collection and concentration; and 10) Dewatering of concentrated clarifier sludge with recycling of filtrate water to the front end of the treatment system. The wastewaters managed were coming from the equalization tank of the Chromium Treatment Area. The equalization tank received wastes coming from Parts Department, the Electro-Chemical Milling (EMC) Department, the EMC fume scrubber emission control residual liquid, and the chrome treatment system's treated effluent. The filter cake sludges generated from treated wastewater was accumulated in drums, and were disposed off site at CECOS, a treatment and disposal facility (TSDF) located in Livington, Louisiana which was owned and operated by Browning- Ferris Ind. Treated wastewater effluent was discharged directly into the unnamed creek that feeds into the Bayamon River until September 4, 1985. Thereafter, the wastewater effluent was discharged to the Puerto Rico Aqueduct and Sewer Authority (PRASA).

On September 30, 1981, the EPA issued an order (order # CWA-II-81-75) to show cause for vilotations of the Clean Water Act. The complaint was filed on April 30, 1975, by the PRASA authority as a result of release that had occurred from the Omark's WWTP. This release had a direct impact on the Santa Rosa Reservoir which is used as a source of drinking water.

A Compliance Sampling Report dated 1982 revealed some violation of variuos parameters including: pH, total chromium, hexavalent chromium, TSS, and iron. Sampling and analytical results of discharge

monitoring report dated January 1986 show high concentrations of hexavalent chromium, iron, zinc, cadmium etc.. at a NEPDES discharge point.

AOC # 1, Chrome Plating Department (CPD): The CPD commenced operations in 1970 and ceased to operate on October 4, 1985. The CPD was involved in the plating manufacturing process. The operations included a total of six (6) plating tanks that contained chromic acid solutions necessary for plating chain saw parts. The tanks operated in parallel and were connected to a chrome treatment area located next to the CPD. Of the six tanks, three (3) were used as receiving tanks for the materials coming from the plating department and for recycled materials. A scrubber was used for scrubbing the chromic acid fumes collected from the plating tanks inside the CPD. The scrubbing solution from the scrubber's bottom container drained into one of the collection tanks in the treatment area. A seventh (7^{th}) tank, which is located below the chrome plating area, received chrome wastewaters, and was used to reduce the chrome wastewaters from hexavalent chromium (Cr^{+6}) to trivalent chromium (Cr^{+3}) in a batch process. The drainage and ventillation systems for the plating operations included ducts and pipes that were located inside trenches in the building's floor. The trenches were directed toward the south wall of the CPD leading the pipes and ducts into the Chrome Treatment Area. The raw materials used in the plating operations were chromic acid, barium carbonate or barium salts, lead anodes, and chromic acid solutions. The CPD managed wastewaters which contained chromium hydroxide, chrome duct deposits, chrome plate resins, chromic acid, ECM duct deposits, and chromium sulfate.

A spill originating from this manufacturing process area was reported on June 18, 1987. The spill was caused by a broken pipe that allowed water to pour into the chrome plating area. Waters contaminated with chromium were drained into the unnamed creek located at the south end of the Omark facility. Visual site inspections conducted by EQB on November 9, 1987, followed-up by sampling and analytical results during the same year, revealed that total chromium concentrations of 270 mg/l, and 3,300 mg/l, respectively, were above background. At the conclusion of Omark's operations, the tanks were sold to another electroplating company in Puerto Rico, and the chromic acid solutions were treated at the chrome treatment area.

AOC # 2, Tool and Die Department (Former Chrome Plating Department) (TDD): The TDD commenced operations in 1964 and ceased oprations on October 4, 1985. During 1970, the plating operatons were moved to a New Chrome Plating Department (AOC #1). Tool and Die operations were conducted to provide support for the rest of the production departments. Apart from metal cutting, no other major operations were conducted in this department. This unit also produced steel metal scrap and cutting oil from the machinery operations. The major raw materials used in this department were cutting oil and sheet metals. Prior to 1970, the wastes generated at this facility were wastewaters containing chrome and chromic acid. After 1970, additional wastes managed consisted mainly of spent oils. After Omark ceased operations in 1985, the major machineries were sold to a third company.

Visual site inspections conducted by EQB in June 1986 revealed the presence of stain within the concrete wall and floor of the TDD. As a follow-up, samples were collected. Reported analytical results confirm that chromium contaminations were present underneath the concrete refills.

AOC #3, Automatic Assembly Department (AAD): The AAD commenced operations in 1965 and

closed in 1985. This department was involved in the assembly of different parts of the chain saws. The assembly was automatically done by specialized machineries. No wastes were managed in this unit. Based on the RFA, chromimum contaminations in this area were coming from the Chrome Plating Department. Sampling and analytical results revealed that chromium concentration was reported at concentration (710 mg/kg) above the background level. After operation ceased in 1985, all machineries were shipped to other Omark facilities.

Groundwater: Groundwater beneath the site was not characterized. There is an existing on-site groundwater well which is approximately 185 feet in depth. The well, which is located behind the Tool and Die Department was used for cooling air compressors and boiler, and for rinsing steels parts.

Groundwater samples were collected from the on-site groundwater well in March, April and May 1985, respectively. Reported analytical results reveal that the concentration of several parameters including total chromium (Cr^{+6}), lead (Pb) and barium (Ba) were below the maximum concentration limit (MCL).

The nearest off-site groundwater well is located approximately 1 mile North in Santa Rosa and belongs to the PRASA.

Surface Water: Surface Water has not generally been investigated. An unnamed creek is located at the south end of the fence out-side the Omark's property boundary. The unnamed creek flows directly to the Bayamon River. Sediment sampling indicated that runnoff or spills originating from Omark operations in the past had drained into the unnamed creek.

According to a topography map, the Rio Bayamon is located approximately 500 feet from the facility.

References:

Original Part A application application submitted to USEPA. Dated November 18, 1980.

NEPDES Compliance Sampling Report submitted to Environmental Quality Board (EQB) for the Wastewater Treatment Plant (WWTP). Dated 1982.

Compliance Sampling Report submitted to EQB. Dated 1982

Revised Part A application submitted to EPA. Dated January 8, 1986.

NEPDES discharge Monitoring Report submitted to EQB. Dated January 1986.

Closure Plan submitted to EPA for the Container Storage Area. Dated January 17, 1986.

Omark Caribbean, Inc.'s RCRA Facility Assessment Report prepared by the EQB submitted to EPA. Dated December 28, 1987.

Letter from O'Neill and Borges, Attorneys for Omark Caribbean Inc,. to EPA/EQB. Dated July 10, 1987.

Remedial Action Workplan (RAP) prepared by UNIPRO- Architects, Engineering and Planners for Omark Caribbean, Inc submitted to EPA/EQB. Dated September 18, 1987.

Closure Certification (Closure Report) was submitted to EPA for the Container Storage Area. Dated February 24, 1988

Closure Certification (Closure Report) was approved by EPA for the Container Storage Area. Dated June 16, 1989.

Remedial Action Report (RAR) prepared by UNIPRO- Architects, Engineering and Planners for Omark Caribbean, Inc submitted to EPA/EQB. Dated February 14, 1989.

Revised Remedial Action Report (RAR) prepared by UNIPRO- Architects, Engineering and Planners for Omark Caribbean, Inc submitted to EPA/EQB. Dated October 2, 1990

Revised RCRA Facility Assessment Report prepared by the Environmental Quality Board (EQB)

submitted to EPA. Dated September 25, 1991.

Sediment Sampling Worplan for unnamed Creek and Creek's enbankment. Prepared by Geraghty and Miller. Dated January 1992.

Remedial Action Report prepared by UNIPRO- Architects, Engineering and Planners for Omark Caribbean, Inc was conditionally approved by EQB. Dated October 30, 1995.

Letter from EQB to Omark to request appropiate QA/QC data to support validity of RAP Report. Dated June 27, 1996.

Final decision of "No Further Action " determination, letter from EQB to Omark Caribbean. Dated July 24, 1996.

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)?

Media	**Yes**	**No**	**Rationale/Key Contaminants**
Groundwater		X	N/A (Not Applicable)
Air (indoors)[2]		X	N/A
Surface Soil (e.g., <2 ft)	X		Cr^{+6}, Ba, 1,1,1-trichloroethane
Surface Water		X	N/A
Sediment	X		Cr^{+6}, Ba, 1,1,1-trichloroethane
Subsurface Soil (e.g., >2 ft)	X		Cr^{+6}, Ba, 1,1,1-trichloroethane
Air (Outdoor)		X	N/A

____ 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

[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.

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.

Soil and Sediment Contaminations : In accordance with the RFA Report dated December 27, 1988, visual site inspections show evidence of stains at the surface soils and concrete at several areas that required investigation. Soil and sediment samples were collected from these areas to characterize the waste, and to determine whether the hazardous waste concentrations were above background levels, and/or action levels. Analytical results, revealed that total chromium (Cr^{+6})), which was the primary hazardous waste of concern, was reported at concentrations of 270 mg/kg, 3,300 mg/kg, 3, 000 mg/kg, 710 mg/kg, 1,000mg/kg, above background levels, and/or action levels, respectively.

Air (Indoors): No assessment of indoor air has been conducted at this property. There was no existing incinerator at the site. Air emissions from this facility did not constitute a significant threat to human health and the environment. A fume scrubber, which was located at a roof in the mezzanine on tap of the Chrome Treatment Area, was used for srubbing the chromic acid fumes collected from the plating tanks. The scubbing solution from the scrubber's buttom container drained into one of the collection tanks in the treatment area. The EQB Air Quality Programs issued an Air Emissions Sources permit (PFE-1105850372) which authorized Omark to manage the fume srubber.

Migration of contaminants into indoor air is not expected to be a concern at this site given that contaminants in the surafce and subsurface soils nearly the entire site had been removed. There are no existing drinking water wells, no groundwater monitoring wells on site. The groundwater does not appear to be impacted, therefore, the groundwater contamination is not a concern for potential migration into indoor air.

Air (Outdoors): No assessment of outdoor air has been conducted at this property. However, migration of contaminants into outdoor air is not expected to be a concern at this site given that contaminants in the surafce and subsurface soils nearly the entire site had been removed.

Subsurface Gas: No subsurface gas was likely to be generated at this facility.

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	Trespasser	Recreation	Food[3]
Groundwater	–	–	–	–	–	–	–
Air (indoor)	–	–	–	–	–	–	–
Surface Soil (e.g. < 2 ft)	No	No	–	No	No	–	–
Surface Water	–	–	–	–	–	–	–
Sediment	–	–	–	–	–	–	–
Subsurface Soil (e.g., > 2 ft)	–	No	–	No	–	–	–
Air (outdoors)	–	–	–	–	–	–	–

Instruction 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. These spaces instead have dashes ("–"). 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.)

A Closure Plan (CP) was submitted for the container storage area on January 23, 1986 and approved on December 17, 1988. The closure certification (clean closure) was submitted on February 24, 1988, and approved by EPA on June 16, 1989. A determination of "No Further Action" was recommended for this unit. At closure, the concrete tanks were demolished as part of the decontamination phase. The equipment was dismantled and disposed off-site with the rest of hazardous wastes generated during the treatment activities.

The CPD, the WWTP, and the TDD areas were dismantled, contaminated soils and materials were removed, and remediated to background level.

Remedial Action Plan (RAP) and Report: Omark submitted a voluntary remedial action workplan (RAP) on September 18, 1987, in lieu of a RFI, to investigate and remove contaminated soils from all identified SWMUs and AOCs, and to remove contaminated sediments in all affected areas. The RAP was also submitted to minimize contamination liabilities at the facility by cleaning the contaminated areas (i.e. concrete walls and floors, remove all machineries, and fill material) encountered in all manufacturing buildings. A separate sampling workplan was submitted on August 7, 1991, as part of the RAP, to investigate and remove contaminanted sediments from the unnamed creek and an embankment of the creek, which were located off-site, adjacent to the former chrome treatment area. The RAP Workplan was approved by EQB on October 30, 1995. The RAP Report was approved by EQB with a recommendation of "No Further Action" determination on July 24, 1996.

Soil and Sediment Contaminations Removal: Soil and sediment remedial actions were undertaken on February 14, 1989 and completed on July 24, 1996. In accordance with the RAP Report, all contaminated fill materials, soils, and sediments which were identified at all SWMUs, AOCs, unnamed Creek, and embankment were decontaminated, excavated and removed. Final excavations and soil removal activities were undertaken at the surface and subsurface soils at depths of 1 to 15 ft in the areas of all SWMUs and AOCs. Following the removal, confirmatory samples were collected and analyzed for EP Toxicity, primarily Cr^{+3}, Cr^{+6}, Ba, Pb, Hg to characterize the waste, and to determine whether the hazardous wastes were above background levels, and/or action levels. Reported analytical results revealed that total chromium concentration, which was the primary hazardous waste of concern, and other concentrations of contaminants were below background levels, and/or action levels. Subsequent to decontamination, excavation and removal activities, all SWMUs' areas were repaired and covered with new concrete. A determination of "No Further Action" was recommended by EQB for all SWMUs, AOCs, the unnamed creek; and the embankment.

Site visit perfromed by EQB on February 19, 1991 confirmed that all excavated and decontaminated areas were repaired and covered with new concrete.

Table 1 - Hexavalent Chromium (Cr^{+6}), Lead (Pb), Barium (Ba), 1,1,1-trichloroethane Soils Contamination Areas and Relevant Actions Taken

SWMUs Area	Area Description	Remedial Action

1	Hazardous waste container storage area	Area was decontaminated, and clean closed with a recommendation of “No Further determination.
2	Chrome Treatment Area	Area was dismantled, contaminated soils were excavated and removed, and remediated to background level, and/or action level.
3	Wastewater Treatment plant (WWTP)	Area was dismantled, contaminated soils excavated and materials were removed and remediated to background level, and/or action level.
AOCs	**Area Description**	**Remedial Action**
1	Chrome plating department	Area was dismantled, contaminated soils excavated and materials were removed and remediated to background level, and/or action level.
2	The Tool and die department	Area was dismantled, contaminated soils excavated and materials were removed and remediated to background level, and/or action level.
3	Automatic assembly department	Area was dismantled, contaminated soils were excavated and removed, and remediated to background level,and/or action level..

Table 2 - Hexavalent Chromium (Cr^{+6}), Lead (Pb), Barium (Ba), 1,1,1-trichloroethane Soils Contamination Areas and Relevant Actions Taken

Others	**Area Description**	**Remedial Action**
1	Unnamed Creek	Sediments were excavated and removed, and remediated to background level, and/or action level..
2	Embankment	Sediments were excavated and removed, and remediated to background level, and/or action level..

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

[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.

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 cannot 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

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

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 Omark Caribbean Inc. (Formerly a subsidiary of Oregon Chain Saw), EPA ID# PRD090038092, located at 88-90 street, Minillas Industrial Park, Puerto Rico, 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: _____

Date:_____

Jean Robert Jean, RPM
RCRA Programs Branch
USEPA Region 2

_____ Date:_____

Dale Carpenter, Section Chief
RCRA Programs Branch
USEPA Region 2

Approved by: Original signed by: Date: March 23, 2006

Adolf Everett, Chief
RCRA Programs Branch
USEPA Region 2

Locations where references may be found:

References reviewed to prepare this EI determination are identified after each response. Reference materials are available at the USEPA Region 2, RCRA Records Center, located at 290 Broadway, 15th Floor, New York, New York.

Contact telephone and e-mail numbers: Jean Robert Jean, USEPA RPM
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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.