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Arnold Schwarzenegger
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November 30, 2004

Ms. Meri Scappatura
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PERMIT EXEMPTION: ONSITE RECYCLING OF WASTEWATER

Dear Ms. Scappatura:

Thank you for your letter dated February 2, 2004 to the Department of Toxic Substances Control (DTSC) and a subsequent meeting with DTSC staff on March 3, 2004 to outline the new wastewater treatment system that Moog Aircraft Group (Moog) is installing at its plant located at 20263 South Western Avenue in Torrance, California. You requested a concurrence from the Department of Toxic Substances Control (DTSC) that the new wastewater treatment system and subsequent wastewater reclamation activity qualify for the permit exemption specified in California Health and Safety Code (Health and Saf. Code) section 25143.2 (c)(2). Moog will be installing a closed loop treatment system from which no wastewater will be discharged to a publicly-owned treatment works (POTW) and the entire amount of the reclaimed water will be reused onsite.

Background

Moog is the manufacturer of precision control components and systems for aircraft, satellites, missiles, and space vehicles. Moog is replacing the existing industrial wastewater treatment plant at their plating operations plant in Torrance, California with a zero-discharge system that will enable Moog to treat all aqueous plating waste and recover all treated wastewater for reuse in their plating facility and scrubbers, thereby eliminating the current practice of discharging the treated wastewater into the Los Angeles area POTW. The current wastewater treatment system will remain operational until the new system is successfully tested, at which point the old system will be decommissioned and removed, eliminating any potential for discharge into the POTW. Moog's current wastewater treatment is currently authorized under the "Permit by Rule" (PBR) program with oversight by the Los Angeles County Fire Department (LACFD) Health Hazardous Materials Division, a Certified Unified Program Agency (CUPA).

Moog's wastewater treatment system will manage three main wastewater types from its plating operations processes. They are: 1a) plating bath waste, 1b) cyanide bearing waste rinsewater, 2) non-cyanide bearing wastewater and dilute rinse water, and 3) air scrubber wastewater.

Plating bath waste

The plating bath waste is generated by the plating process and is composed of sodium cyanide, copper cyanide, rochelle salt, sodium carbonate, and sodium hydroxide. The plating bath waste enters the cyanide bearing wastewater storage tank where it is mixed with the cyanide bearing wastewater and other cyanide bearing waste. The combined waste from the plating bath and cyanide bearing wastewater will be processed via thermal hydrolysis destruction in 250-gallon sized batches. The reaction converts the cyanide into sodium formate and ammonia. The treated cyanide bearing wastewater will be pumped into a cyanide proofing tank for analysis to ensure the completeness of the cyanide destruction process. Total cyanide concentration will be measured using onsite laboratory methods (HACH test methods). If the cyanide destruction is determined by testing to be incomplete for any batch, the cyanide bearing wastewater will be returned to the cyanide bearing waste storage tank for further treatment (destruction). Once it is determined that the cyanide destruction process is complete, this treated wastewater will be pumped to the concentrated wastewater equalization tank for further treatment as described in the latter portion of the section entitled, "Non-cyanide bearing wastewater".

Cyanide bearing waste rinsewater

The cyanide bearing waste rinsewater is composed of wastewater from cyanide rinse tanks, cyanide plating baths, and all other cyanide contaminated wastewater generated by the plating processes. The cyanide bearing wastewater will be processed in the same manner as the plating bath waste. Please refer to the previous section, "Plating bath waste" for the description of the cyanide destruction process.

Non-cyanide bearing wastewater

The non-cyanide bearing wastewater is a combination of dilute rinse water and concentrated wastewater from the plating process rinses and contains the following: alkaline cleaner, anodizing rack stripper, oil dispersion cleaner, electrocleaner, anode cleaner, chrome strip, aluminum cleaner, rust and scale remover, sodium hydroxide, deoxidizer, desmutter, anodize seal, clean films class 3 and 1A, anodize stripper, sulfamic acid, electroetch, hydrochloric acid, nickel strike, activation nitric acid, iridite, mixed acid (sulfuric and nitric acids), passivate types VI and VIII, nitric acid (4%), hydrochloric acid (5%), manganese phosphate, zinc phosphate, black oxide, chromic dip, copper strip, and neutralization rinse. The non-cyanide bearing wastewater will be accumulated in the concentrated wastewater equalization tank. After accumulation, the combined treated cyanide bearing wastewater and the non-cyanide bearing wastewater will be vacuum-assisted, flash distilled. The distillate will be directed to the ion exchange equalization tank where it will be combined with the third wastewater type, the air scrubber wastewater.

Air scrubber wastewater

The air scrubber wastewater consists of scrubber spray down water and filter washing water from the air scrubbers that remove the chemicals used in the plating process that have vaporized. The air scrubber wastewater contains low concentrations of cyanide, nickel, copper, cadmium, chromium, zinc, and aluminum. The air scrubber wastewater will be combined with the distillate from the combined treated cyanide bearing wastewater and the non-cyanide bearing wastewater in the ion exchange equalization tank. The treatment process for the wastewater that is fed into the ion exchange equalization tank follows this sequence:

- 1) The wastewater is passed through 10-micron oleo-phobic filters for the removal of suspended solids, oils, and organic compounds.
- 2) Back-washable granular activated charcoal (GAC) removes soluble organic contaminants from the wastewater. The GAC filter backwash is directed to the concentrated wastewater equalization tank.
- 3) The wastewater passes through 5-micron filters for removal of suspended solids and GAC fines.
- 4) Soluble inorganic contaminants are removed from the wastewater by counter-current strong acid and weak base anion exchange columns. All regeneration wastewater, acid, caustic and inorganic contaminants are directed to the concentrated wastewater equalization tank.
- 5) The wastewater is then filtered through a 1-micron filter to remove fine suspended solids.

From the ion exchange equalization tank, the combined wastewater is passed through filters and resin beds to remove soluble organics, insoluble organics, suspended solids, and granular activated carbon fines. Lastly, the combined wastewater is treated by ultra-violet light sterilization. The reclaimed water will be stored in the "Reverse Osmosis" tank and used in the plant plating processes and the air scrubbers.

Status of the Materials under Federal Law

Plating bath waste

The cyanide plating bath, when exhausted, would be a spent material pursuant to Title 40 of the Code of Federal Regulations, section (40 CFR) 261.1(c)(1) and a solid waste pursuant to 40 CFR 261.2(c)(3). Additionally, it is also a listed hazardous waste (F007-spent cyanide plating bath solutions from electroplating operations) pursuant to 40 CFR 261.31. The spent bath would presumably exhibit the characteristic of: corrosivity, D002 (40 CFR 261.22); reactivity, D003 (40 CFR 261.23(a)(5)); and toxicity due to cadmium, D006 (40 CFR 261.24). As a result, the spent plating bath would be identified as a hazardous waste pursuant to 40 CFR 261.3(a)(2)(ii).

Cyanide bearing waste rinsewater

The cyanide bearing waste rinsewater can no longer be used for the purpose for which it was intended and meets the definition of a "spent material" pursuant to 40 CFR 261.1(c)(1). It meets the definition of a solid waste pursuant to 40 CFR 261.2(c)(3) because it will be recycled by being reclaimed. Although the cyanide bearing waste rinsewater contains a listed waste (F007), the United States Environmental Protection Agency (U.S. EPA) stated in a memorandum dated April 7, 1988 that, "rinse waters from electroplating operations are not within the scope of the F007, F008, or F009 hazardous waste listings". Therefore, as generated, the waste rinsewater would not be a listed hazardous waste under the mixture rule. However, this cyanide bearing waste rinsewater may exhibit one or more characteristics of hazardous waste including: corrosivity, D002 (40 CFR 261.22); reactivity, D003 (40 CFR 261.23(a)(5)); or toxicity due to cadmium, D006 (40 CFR 261.24). As a result, the waste rinsewater would be identified as a hazardous waste pursuant to 40 CFR 261.3(a)(2)(i).

Non-cyanide bearing wastewater

This wastewater, which is derived from non-cyanide bearing rinse tanks, can no longer be used for the purpose for which it was intended and meets the definition of a "spent material" pursuant to 40 CFR 261.1(c)(1). The non-cyanide bearing wastewater is a solid waste pursuant to 40 CFR 261.2(c)(3) because it will be recycled by being reclaimed. The non-cyanide bearing wastewater may exhibit one or more characteristics of a hazardous waste including corrosivity, D002 (40 CFR 261.22); and toxicity pursuant to 40 CFR 261.24 due to the cadmium (D006) and chromium (D007). As a result, the wastewater would be identified as a hazardous waste pursuant to 40 CFR 261.3(a)(2)(i).

Air scrubber wastewater

The air scrubber wastewater meets the definition of a sludge pursuant to 40 CFR 260.10. A sludge is, "any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant". It may exhibit one or more characteristics of a hazardous waste, including corrosivity, D002 (40 CFR 261.22); toxicity pursuant to 40 CFR 261.24 due to cadmium (D006) and chromium (D007) and as a result, would be identified as a hazardous waste pursuant to 40 CFR 261.3(a)(2)(i). However, sludge that exhibits a characteristic of a hazardous waste is not solid waste when reclaimed (40 CFR 261.2(c)(3)) and therefore would not be regulated as a hazardous waste when recycled as proposed.

The plating bath waste, cyanide bearing wastewater, non-cyanide bearing wastewater, and air scrubber wastewater are combined in the water reclamation process and the combined wastewater would be hazardous waste pursuant to the mixture rule, 40 CFR 261.3(a)(2)(iv). However, pursuant to 40 CFR 261.3(c)(2)(i), "materials that are reclaimed from solid wastes and that are used beneficially are not solid wastes and hence not hazardous wastes under this provision unless the reclaimed material is

burned for energy recovery or used in a manner constituting disposal.” Therefore, the reclaimed water would not itself be hazardous waste when recycled as proposed by Moog.

Status of the Materials under State Law

Plating bath waste

The cyanide plating bath has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing and thereby meets the definition of a “spent material” in California Code of Regulations, Title 22, (Cal. Code Regs. 22, §), section 66260.10. It is also a waste pursuant to Cal. Code Regs., tit. 22 § 66261.2 (d)(3) which states that, “a material is a waste if it is recycled, or accumulated, stored, or treated before recycling by being managed through being reclaimed”. It is also a listed hazardous waste (F007-spent cyanide plating bath solutions from electroplating operations) pursuant to Cal. Code Regs., tit. 22 § 66261.31. Additionally, the spent bath may exhibit one or more characteristics of hazardous waste including: corrosivity (Cal. Code Regs., tit. 22 § 66261.22); reactivity (Cal. Code Regs., tit. 22 § 66261.23(a)(5)); and toxicity pursuant to Cal. Code Regs., tit. 22 § 66261.24 due to cadmium.

Cyanide bearing waste rinsewater

The cyanide bearing waste rinsewater generated at Moog meets the definition of a spent material because it has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing (Cal. Code Regs., tit. 22, § 66260.10). It also meets the definition of a waste pursuant to Cal. Code Regs., tit. 22 § 66261.2 (d)(3) because it is a spent material being recycled by reclamation. However, the cyanide bearing waste rinsewater contains cadmium from the plating bath waste and may exhibit one or more characteristics of a hazardous waste. These characteristics are corrosivity, (Cal. Code Regs., tit. 22 § 66261.22); reactivity, (Cal. Code Regs., tit. 22 § 66261.23(a)(5)); and toxicity due to cadmium, (Cal. Code Regs., tit. 22 § 66261.24). If the waste rinsewater exhibits one or more hazardous waste characteristics, the waste rinsewater would be a hazardous waste pursuant to Cal. Code Regs., tit. 22 § 66261.3(a)(2)(A).

Non-cyanide bearing wastewater

This wastewater, derived from non-cyanide bearing rinse tanks, can no longer be used for the purpose for which it was intended and meets the definition of a “spent material” pursuant to Cal. Code Regs., tit. 22, § 66260.10. The non-cyanide bearing wastewater is a solid waste pursuant to Cal. Code Regs., tit. 22 § 66261.2 (b)(2) because as a spent material it is being recycled by reclamation. The non-cyanide bearing wastewater may exhibit one or more characteristics of a hazardous waste including corrosivity, (Cal. Code Regs., tit. 22 § 66261.22); and toxicity pursuant to Cal. Code Regs., tit. 22 § 66261.24 due to cadmium, chromium, nickel, copper, and zinc. If the non-cyanide

bearing wastewater exhibits one or more of the hazardous waste characteristics, the wastewater is a hazardous waste pursuant to Cal. Code Regs., tit. 22 § 66261.3(a)(2)(A).

Air scrubber wastewater

This wastewater is generated in an air pollution control facility and therefore meets the definition of a sludge pursuant Cal. Code Regs., tit. 22 § 66260.10. The sludge is going to be recycled by being reclaimed and therefore meets the definition of a waste pursuant to Cal. Code Regs., tit. 22 § 66261.2 (d)(3). It may exhibit one or more characteristics of a hazardous waste, including corrosivity, (Cal. Code Regs., tit. 22 § 66261.22); and toxicity pursuant to Cal. Code Regs., tit. 22 § 66261.24 due to cadmium, chromium, nickel, copper, and zinc. If the air scrubber wastewater exhibits one or more of the hazardous waste characteristics, it is a hazardous waste pursuant to Cal. Code Regs., tit. 22 § 66261.3(a)(2)(A).

The plating bath waste, cyanide bearing waste rinsewater, non-cyanide bearing wastewater, and air scrubber wastewater are combined in the water reclamation process and the combined wastewater would be hazardous waste pursuant to the mixture rule, (Cal. Code Regs., tit. 22 § 66261.3(a)(2)(F)). However, pursuant to Cal. Code Regs., tit. 22 § 66261.3(c)(1), "materials that are reclaimed from solid wastes and that are used beneficially are not solid wastes and hence not hazardous wastes under this provision unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal." Therefore, the reclaimed water would not be regulated as a hazardous waste once fully reclaimed and reused. Any treatment residuals generated from the recycling process would be a hazardous waste and must be managed as such (Cal. Code Regs., tit. 22 § 66261.3(c)(1)).

The recycling of the wastewater and reuse onsite is exempt from the applicable hazardous waste facilities permit requirements pursuant to Health and Saf. Code § 25143.2(c)(2). Several requirements must be met for the exemption to apply. Those requirements are summarized below:

- The recyclable material must be recycled and reused onsite.
- Pursuant to Health and Saf. Code § 25143.2(c), the generator accumulation time limits which normally apply to the hazardous waste will instead apply to the recyclable material, i.e., the wastewater must be reclaimed and reused onsite within ninety days.
- The recyclable material must be managed in accordance with the hazardous waste standards established for generators including the requirements for the containers found Cal. Code Regs., tit. 22, §§ 66265.170 through 66265.178; and tank systems that store the recyclable material pursuant to Cal. Code

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- Regs., tit. 22, §§ 66265.190 through 66265.199 [except § 66265.197(c)]. Generator requirements also apply to any hazardous waste generated from onsite treatment processes.
- Health and Saf. Code § 25143.2 (f) applies. Subdivision (f) requires that records be kept and made available to DTSC, the California Environmental Protection Agency (Cal EPA), or the authorized local agency or official.
- Persons managing recyclable materials pursuant to a Health and Saf. Code § 25143.2(c)(2) permit exemption also have the responsibility to comply with Health and Saf. Code § 25143.10. In the County of Los Angeles, the information required by Health and Saf. Code § 25143.10 should be provided to the Los Angeles County Fire Department Health Hazardous Materials Division.

Conclusion

The recycling of wastewater for reuse at the site of generation, specifically in the plant plating processes and the air scrubbers as described in your letter dated February 2, 2004 does not require authorization from DTSC if all the conditions of Health and Saf. Code § 25143.2(c)(2) are met. Specifically, the wastewater must be recycled and reused (in its entirety and without any discharge into the POTW) at the same facility at which the wastewater is generated within the applicable generator accumulation time limits specified in Cal. Code Regs., tit. 22, § 66262.34 and must be managed in accordance with all the applicable requirements for the generators of hazardous waste.

If you have questions regarding this letter, please contact Mr. Charles Corcoran or Ms. Renée Spears of my staff, at (916) 327-4499 or (916) 324-8192 respectively.

Sincerely,



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