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HTF Condition of Certification

>>> "James Brathovde" <JBrathovde@waterboards.ca.gov> 2/24/2010 5:32 PM >>>

Ellie,

Attach is the your word document for your Waste MGT section. I've replaced USEPA Method 8015 with EPA 1625B in two places -using track changes- please accept the changes.

Lahontan staff determined, with concurrence from our contracted lab, that 8015 is not an appropriate method for biphenyl and diphenyl ether (oxide). 8015 uses a gc and is a proven analysis for certain analysis, and we accept the method for diesel and kerosene range petroleum hydrocarbons spills. The MSDS shows HTF is composed of biphenyl and diphenyl oxide (ether) and USEPA Method 1625B (revised July 1, 1995)(40CFR136) can accurately detect the two compounds spilled at Mojave Solar. Method 1625B uses a gc/ms and should have a lower detection level.

In the future, the applicant may request a method comparison i.e. comparing Method 1615B with 8015 or a modified 8270 which is fine, but is up to the applicant to show the different methods give the same results- which Lahontan staff question at this time.

Also, in the LTU in our Title 27 monitoring "requirements" we are going to require testing using Method 1625B for HTF and Method 8260 (also gc/ms) for volatile degradation products of HTF such as benzene and toluene.

Thank you
Jams Brathovde

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Heat Transfer Fluid Waste

The AMS will use solar thermal technology to power a steam-turbine generator. The solar collectors consist of parabolic trough mirrors that heat Therminol VP-1, a petroleum based oil that serves as a heat transfer fluid (HTF). This oil or HTF is a mixture of 26.5 percent biphenyl and 73.5 percent diphenyl oxide. The HTF is circulated through a solar steam generator where it transfers heat and generates high pressure steam that turns a steam turbine generator and produces electrical power (AS2009a, page 2-7). Approximately 2,292,000 gallons of Therminol VP-1 would be present with the solar system, including the piping and necessary expansion tanks.

Occasional spills of HTF from either equipment failure or human error can result in the generation of contaminated soil. The applicant estimates that 750 cubic yards per year of soil contaminated with HTF (see AFC Table 5.16-6) would be bioremediated (aeration puls nutrients) or land farmed (aeration only) and approximately 10 yards of HTF-contaminated soil would be sent for disposal at a permitted Class I landfill. (ESH 2009d Data Response 83 and 86). HTF spills typically spread laterally on the bare ground and soak down to a relatively shallow depth. In these cases, the soil must be removed from the spill site and properly managed. The oil is regulated as a hazardous material by the State of California due to the constituent biphenyl. Biphenyl is listed in Title 22, CCR, Chapter 11 Appendix X (list #299) as an extremely hazardous waste. The listing of a chemical in Appendix X creates the regulatory presumption that a waste containing that chemical (i.e. HTF contaminated soil) is hazardous unless determined otherwise, pursuant to specified procedures.

In an e-mail communication from California Department of Toxic Substances Control (DTSC) (CEC 2009t¹), they indicated that the determination of whether a discharge of HTF constituted a hazardous waste would need to be made on a case by case basis. Title 22, CCR, section 66260.200(f) places the responsibility of determining whether a waste must be classified as hazardous on the generator of that waste. They also indicated that once a generator establishes a history of managing waste discharges and develops a sufficient data set for characterization of the discharges as hazardous or non-hazardous, DTSC could be petitioned for their concurrence on a standardized waste classification for HTF contaminated soils generated at the facility (Title 22, CCR, section 66260.200(d)). Depending on DTSC findings an operator could modify their operations to standardize treatment and eliminate the need for case by case determinations.

The older facilities such as Luz Solar Energy Stations (SEGS) III through IX have operated in San Bernardino County since 1989 and have a history of using, storing and treating HTF contaminated soils on-site in bioremediation units and Land Treatment Units (LTUs), primarily LTUs. DTSC in an April 4, 1995, letter determined that a sample

¹ California Energy Commission/ E. Soloriao (tn 51934). Staff Dialogue with Department Toxic Substances Control regarding HTF, dated 6/9/09. Submitted to CEC/Docket Unit on 6/11/09.

of soil contaminated with HTF in concentrations of less than 10,000 mg/kg was classified as a non-hazardous waste. Soils with concentrations below 10,000 mg/kg were placed in the LTU for treatment and are used as back fill material on the project property. Soil with concentrations in excess of 10,000 mg/kg is contained, handled, managed, and disposed of as a hazardous waste at an approved disposal facility. These criteria are currently used as a basis for ongoing operation of the facility. Also, based on their operation data from this facility, the applicant estimates that approximately 750 cubic yards of HTF-affected soil may be treated per year at the proposed project site.

The HTF system will be designed to minimize the potential for HTF leakage or spills to soil, any occurrences will be reported and the spill will be excavated. The project site will include a bioremediation/landfarm units to treat soil contaminated with HTF caused by leaks or spills. The proposed bioremediation and land farm facilities will cover an area of approximately 1.5 acres one will be established at each plant site (Data Response 83).. Spills of HTF at AMS would be cleaned up within 48 hours, and the contaminated soil would be placed in the staging area of the LTU and covered with plastic sheeting. Samples of excavated HTF contaminated soil would be collected in accordance with the United States Environmental Protection Agency's (USEPA) current version of the manual "Test Methods for Evaluating Solid Waste" (SW-846). The waste material would be characterized in accordance with State and Federal requirements and the results would be submitted to DTSC for a determination of the appropriate disposal method based on whether the waste is considered hazardous or non-hazardous. HTF contaminated soil would remain in the LTU staging area until the impacted soils are properly characterized using modified USEPA Method 1625B 8015 (Data Response 84). ~~Modified USEPA Test Method 8015 is the most common test method used for analyzing total petroleum hydrocarbon (TPH). TPH is defined as the measurable amount of petroleum-based hydrocarbon in an environmental media. The method reports the concentration of purgeable and extractable hydrocarbons, such as gasoline and diesel range organics.~~ Soil characterized as hazardous waste would be transported from the site by a licensed hazardous waste hauler for disposal at a Class I landfill. Soils characterized as non-hazardous would remain and be treated in the LTU (Data Response 85).

Staff proposes that once a history of discharges has been established they may petition DTSC, as described above, for their concurrence on a standardized waste classification for HTF contaminated soils generated at the facility. Depending on DTSC findings the applicant would modify their operations to standardize treatment and eliminate the need for case by case determinations.

The applicant's treatment and disposal methods are generally consistent will be in compliance with the Requirements of Waste Discharge established by the Lahontan Regional Water Quality Control Board (LRWQCB) and presented in **Soil and Water Resources Appendices E, F, and H**. Staff proposes Condition of Certification **WASTE-7** to address the Requirements of Waste Discharge. This would require the applicant to comply with the requirements for accidental discharges of HTF associated with the

operation of the project and ensure that hazardous concentrations of contaminated HTF-soil will not be treated in the LTU (Data Response 85). With implementation of Condition of Certification **WASTE-7** staff believes there would be no significant impacts due to HTF spills during project operation.

WASTE-7: The project owner shall submit to the CPM and DTSC for approval the applicant's assessment of whether the HTF contaminated soil is considered hazardous or non-hazardous under state regulations. HTF-contaminated soil that exceeds the hazardous waste levels must be disposed of in accordance with California Health and Safety Code (HSC) Section 25203. HTF-contaminated soil that does not exceed the hazardous waste levels may be discharged into the land treatment unit (LTU). For discharges into the LTU, the project owner shall comply with the Waste Discharge Requirements contained within Appendix E, F, and H, in the Soil & Water Resources section of the Final Staff Assessment.

Verification: The project owner shall document all releases and spills of HTF as described in Condition of Certification **WASTE-9** and as required in Appendix E, F, and H, in the Soil & Water Resources section of the Final Staff Assessment. Cleanup and temporary staging of HTF-contaminated soils shall be conducted in accordance with the approved Operation Waste Management Plan required in Condition of Certification of **WASTE-6**. The project owner shall sample HTF-contaminated soil in accordance with the United States Environmental Protection Agency's (USEPA) current version of "Test Methods for Evaluating Solid Waste" (SW-846). Samples shall be analyzed in accordance with USEPA Method [1625B8015](#) or other [comparable](#) method to be reviewed and approved by DTSC and the CPM.

Within 14 days of an HTF spill the project owner shall provide the results of the analyses and their assessment of whether the HTF-contaminated soil is considered hazardous or non-hazardous to DTSC and the CPM for review and approval.

If DTSC and the CPM determine the HTF-contaminated soil is considered hazardous it shall be disposed of in accordance with California Health and Safety Code (HSC) Section 25203 and procedures outlined in the approved Operation Waste Management Plan required in Condition of Certification **WASTE-6** and reported to the CPM in accordance with Condition of Certification **WASTE-9**.

If DTSC and the CPM determine the HTF-contaminated soil is considered non-hazardous it shall be retained in the LTU and treated on-site in accordance with the Waste Discharge Requirements contained within Appendix E, F, and H, in the Soil & Water Resources section of the Final Staff Assessment.