

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

400 P Street, 4th Floor

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Sacramento, CA 95812-0806

(916) 323-6042



June 8, 1993

Mr. Alex R. Potter
A.R. Potter Associates
2340 Quiet Place Drive
Walnut Creek, California 94598

OFFSITE RECLAMATION OF USED STERILANT GAS

Dear Mr. Potter:

This is in response to your recent letter requesting concurrence from the California Department of Toxic Substances Control (Department) that used sterilant gas would be excluded from regulation as a hazardous waste, if it would be returned to the supplier of the virgin gas for recycling.

According to your letter and enclosures, your client recovers used sterilant gas (called "used gas" hereafter) from hospitals and other locations in California, and ships it out-of-state in sealed steel cylinders (called "used cylinders" hereafter) to the supplier of the virgin gas for reclamation. The gas is "Oxyfume 12," which when used is a mixture of ethylene oxide (3.9 percent), "refrigerant 12" (apparently "Freon 12" or dichlorodifluoromethane; 93 percent), air (concentration unspecified; approximately 3.075 percent by difference), and water vapor (approximately 250 ppm; 0.025 percent). The used gas is not a listed or characteristic hazardous waste under federal regulations (although the lack of ignitability of the used gas was apparently only assumed, based on the lack of ignitability of the virgin gas). The used cylinders are the same cylinders which had held the virgin gas.

Although neither your letter nor enclosures addressed the supplier's recycling of the used gas, our telephone conversations on May 3 and 11, 1993 revealed that the supplier would empty the used gas from the used cylinders, treat (i.e., reclaim) it with a desiccant (presumably alumina) to remove the water vapor, determine the resultant concentrations of the desired constituents, and add ethylene oxide and/or "refrigerant 12" as needed to restore the used gas to virgin quality. Then the supplier would return the reclaimed gas in the same cylinders, which had held the used gas, to the same customers (not necessarily to the identical customers on a batch basis) from whom the used gas had been recovered.



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Our May 11, 1993, telephone conversation also revealed that the used gas, the reclaimed gas, and the virgin gas would always be under pressure when contained in the cylinders, so the pressure in the cylinders would not approach atmospheric at any time [except (presumably) when emptied by the supplier prior to reclamation of the used gas]. In addition, the used gas, the reclaimed gas, and the virgin gas would always be contained, because at a hospital (for example), the virgin (or the reclaimed) gas would be released directly from a cylinder into a sealed sterilization chamber, and then the used gas would be pumped directly from that chamber into a used cylinder. At the supplier, the used gas would be contained at all times, particularly during reclamation.

Based on the above information, the Department believes that the used gas would be a non-Resource Conservation and Recovery Act (RCRA) hazardous waste, as defined in section 25117.9, Chapter 6.5, Division 20, Health and Safety Code (HSC), for the following reasons: it would not be regulated as a hazardous waste by the U.S. Environmental Protection Agency (U.S. EPA); it would be a contained gas; and it would consist (in part) of ethylene oxide. The used gas would be contained at all times, so it would be included under the definition of "waste" in HSC section 25124. The ethylene oxide in the used gas would be a toxic hazardous constituent [see Waste No. 331 in subdivision (a) of Appendix X, Chapter 11, Division 4.5, Title 22, California Code of Regulations (CCR)] whose presence would render the used gas hazardous, unless the used gas could be shown to be nonhazardous when tested pursuant to 22 CCR Chapter 11. Since federal and state toxicity tests differ, and since no test results were provided, the used gas would presumably be a hazardous waste while in California.

The used gas would apparently be a non-RCRA hazardous waste and a recyclable material, but the used gas could not qualify for exclusion from Departmental regulation under the recyclable material provisions of HSC section 25143.2, because it would be reclaimed offsite by chemical means (i.e., the used gas would be treated with alumina to remove water vapor). For example, all of the recyclable material exclusions of HSC section 25143.2(b) would prohibit reclamation of the used gas in any way, whereas the corresponding exclusions of HSC section 25143.2(d)(5) and (6) [the only potentially pertinent ones in subdivision (d)] would allow specified types of physical, but not chemical reclamation of the used gas.

Although the used cylinders containing the used gas could possibly qualify as "contaminated containers" under 22 CCR

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section 66261.7, they could not qualify for any of the exemptions or exclusions for such containers in that section, because those provisions would generally require the containers to be emptied insofar as possible. For example, the pressure in compressed gas cylinders would have to approach atmospheric pressure in order to prevent the cylinders from being regulated as hazardous wastes [22 CCR section 66261.7(1) and (p)]. Since the used cylinders would maintain the used gas under pressure, the pressure in those cylinders could not approach atmospheric pressure.

In summary, if the used gas would not be tested, or if it would be tested and found to exhibit a hazardous characteristic, then the used gas and the cylinders containing it would be fully regulated as hazardous wastes and recyclable materials while in California. No exclusions for recyclable materials, or exemptions or exclusions for contaminated containers, would apply to the used gas and/or the used cylinders. Therefore, the used gas in the cylinders could still be transferred out-of-state for reclamation, provided that (among other requirements) the gas would be hauled by a transporter who is registered with the Department and who carries a properly completed manifest.

Enclosed are copies of some of the recycling and related laws cited above. If you have questions regarding this letter, please contact me at (916) 323-2908 or write to me at the letterhead address.

Sincerely,



Eric Workman
Resource Recovery Unit
Program Coordination and
Policy Development Branch

Enclosure

cc: ✓ Mr. Leif Peterson, Acting Chief
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Program Coordination and
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Department of Toxic Substances Control
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EW:ew/ba



Chevron

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May 17, 1993

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Dear Mr. Peterson:

Pursuant to your request, I am providing the following explanation why the material recycled in the manufacture of Techroline® at the Chevron Chemical Plant in Richmond, California is not subject to regulation as a waste under the Hazardous Waste Control Law.

In the process under consideration, raw material feeds are combined and undergo a chemical reaction to produce the product, Techroline®. One of the raw materials fed to the process is diethylenetriamine (DETA), a very high value material. All the DETA fed to the process, however, does not react. So, unreacted DETA is recovered and used as feed in classic, closed-loop configuration. The process is shown conceptually in the accompanying Figure.

During an inspection of this facility, Mr. Michael Pixton asked why Chevron considered the recycling of DETA to be exempt from regulation under the Hazardous Waste Control Act. Mr. Pixton pointed specifically to H&SC § 25143.2(e)(3) which disqualifies materials "burned for energy recovery, used to produce a fuel, or contained in fuels" from all recycling exemptions subject to certain limited exceptions which do not apply here.

I assume for this discussion that the materials involved would be hazardous if they were considered wastes. In addition, I understand that it is agreed that the recycled material is eligible for at least one recycling exemption under § 25143.2, e.g. § 25143.2(d)(1), because the material is not a solid waste under RCRA (40 CFR § 261.4(a)(8)) and it is recycled and reused at the site of generation. Consequently, I will focus on an analysis of the disqualification language under § 25143.2(e).

Initially, it is important to define the material for which the exemption from regulation is being claimed. The exemption is claimed for that stream exiting from product recovery which enters DETA recovery, i.e., the stream from which DETA is recovered.
See Figure at A.

Two streams exit DETA recovery. One is a waste which is incinerated and the other is DETA, which is indistinguishable from and mixed with purchased DETA. Chevron

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sometimes refers to the stream from which DETA is recovered as DETA aqueous wash water or DETA wash water. It is composed approximately as follows:

| | <u>wt/%</u> |
|--------------|-------------|
| Water | 66 |
| DETA | 27 |
| n-butanol | 2 |
| Salt caustic | 5 |

As you know, § 25143.2(e)(3) will disqualify the recycling of DETA wash water from a recycling exemption, if any of the following three conditions apply: 1) the material is burned for energy recovery; 2) the material is used to produce a fuel; or 3) the material is contained in fuels.

Chevron submits that the DETA wash water is not burned for energy recovery; it is not used to produce a fuel; and it is not contained in fuels. Rather, the DETA wash water is processed to recover DETA. The recovered DETA is reacted with other materials to make an entirely different chemical substance, the product, Techroline[®], which is sometimes contained in fuels. However, Techroline[®] is not the material for which an exemption is claimed. The ultimate use of Techroline[®] is not relevant to the determination of the applicability of a recycling exemption for DETA wash water. Moreover, the same analysis would hold even if recovered DETA were to be considered the material for which the recycling exemption is claimed. One need go no further than the plain language of § 25143.2(e) to reach this result.

Referring to the Figure, one can see that raw material recovery and recycle and incorporation of the end product into a fuel are essentially unrelated. The product chemical Techroline[®] is always the same irrespective of whether DETA is recovered. Furthermore, the recovery and recycle of DETA does not introduce any contaminants into the product. Consequently, Chevron believes that both the language and the intent of the Hazardous Waste Control Act supports your inclination that this kind of recycling should not be regulated by the Department.

Please feel free to call me to discuss this matter in any detail.

Very truly yours,


Steven H. Roth

SHR:mcs

cc: Mr. Michael Pixton
Mr. J. J. Rodgers

Figure

