



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

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Nicholas J. Nedeau
Senior Counsel
UOP LLC
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Des Plaines, Ill 60017-5017

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Dear Mr. Nedeau:

This letter is in response to your March 30, 1999 letter and subsequent telephone conversations with Larry Reisman of EPA's Toxics Release Inventory Branch concerning the applicability of section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) to your facility. You are asking for guidance about the applicability of the laboratory activities exemption (40 CFR section 372.38(d)) to the research and development activities conducted at UOP laboratories.

According to your letter the facility at issue is comprised of a manufacturing plant (that makes refining catalysts and specialty chemicals - SIC codes 2869 and 2819) and a research and development (R&D) operation (that focuses on the petroleum and petrochemicals industry - SIC code 8731). You further provide that the on-site R&D operation focuses on petroleum refining and petrochemical production process and product technologies. On-site R&D consists of an analytical laboratory, product development laboratories, various craft shops (electrical, machine, etc.), a dedicated tank farm and drum yard for storing R&D feedstocks, and numerous "experimental pilot plants."

According to your letter, the "experimental pilot plants" are used by UOP to generate data. Both established and new processes and products are researched. The data are used to establish the optimum design factors for commercial petroleum and petrochemical process units by identifying feedstock specifications, catalyst/adsorbent volumes required, acceptable operating conditions, and product properties. In addition, the data are the basis of UOP's process guarantees regarding product quality and yields, catalyst/adsorbent life, and catalyst/adsorbent regenerability. UOP also uses these "experimental pilot plants" to develop new catalyst and adsorbent compositions. Small quantities of a new formulation will be tested against a reference catalyst or adsorbent in an attempt to improve the activity, selectivity or durability of UOP products. The duration of the experiments conducted in the "experimental pilot plants" may last from a few hours to several weeks.

In your letter you assert that while the term "pilot plants" is firmly entrenched in UOP's vocabulary, the experimental pilot plants taking place at UOP more closely resemble "bench scale lab units." You state that the experimental pilot plants are many orders of magnitude smaller than commercial refinery or petrochemical plant units, with scale up factors ranging from around 90,000 to over 1,000,000. In short, you believe these pilot plants are not scaled down versions of commercial units, but rather contain the equipment necessary to generate meaningful data.

There are approximately 100 experimental pilot plants located at the facility, with about 35 to 40 of them in operation at one time. These units are located in four distinct buildings, each of which has an area of approximately 5000 ft². One operator can run from one to six plants at a time, depending on which units are operating.

You also state that UOP believes that the research operations are overseen by "technically qualified individuals," as that term is defined at 40 CFR 720.3(ee). The experimental pilot plants are overseen by operation specialists and shift supervisors, who average 18.2 and 20.5 years of experience, respectively. The experimental set-up and analysis are overseen daily (except weekends and holidays) by data technicians and junior-level chemical engineers. They analyze the experimental data and modify the experiment as necessary. Data results are forwarded to and further analyzed by a senior-level chemical engineer or research chemist. This senior researcher then further adjusts the course of the research experiment and perhaps even the research project as a whole.

Further, a wide variety of feedstocks are used for the experimental pilot plants. In order to ensure that the processes and products offered by UOP perform over a wide range of process conditions, it is necessary to test feedstocks with differing characteristics. These feedstocks are used to identify appropriate concentration limits or conditions for commercial customers. You assert that this large variability in feedstocks is more consistent with laboratories than with manufacturing operations. However, you also state that to eliminate feedstock characteristics as a variable in the research and development process, UOP purchases "reference feeds" in bulk and stores them in a tank farm for future use. The tanks in the tank farm range in capacity from 1,000 to 12,000 gallons, with the feeds stored in these tanks for two to five or more years. Reference feeds typically include various naphthas, vacuum gas oils, and light cycle oils.

Next, you address the quantities of feed processed for the laboratory operations. You provide that the total liquid hydrocarbons processed by the research activities in 1997 and 1998 were 1.35 gallons/plant-day and 1.41 gallons/plant-day, per lab unit, respectively.

Finally, you assert that the only "products" produced in the experimental pilot plants are data that result from the experiments conducted. The liquids and gases generated during the experiments are collected, sampled and analyzed in order to characterize the performance of the specific process conditions and catalysts being tested. According to your letter, at no time are the experimental pilot plants used to supplement manufacturing production. However, you state that product development samples (e.g., catalysts) may be supplied to customers for evaluation purposes. In a follow-up telephone conversation you stated that these samples are less than one

pound in weight. These samples will be tested in another laboratory. The samples, however, will not satisfy a customer's commercial need.

The regulation for the laboratory activities exemption expressly states that "[t]his exemption does not apply in the following cases:

- [1] Specialty chemical production.
- [2] Manufacture, processing, or use of toxic chemicals in pilot plant scale operations.
- [3] Activities conducted outside the laboratory."

(40 CFR section 372.38(d)).

Further, the preamble language for the laboratory exemption regulatory text provides the following:

Commenters stated that it would be burdensome to require laboratories to determine whether they must comply because of the potentially large number of mixtures and chemicals on-site in small volumes and the relatively rapid turnover of such chemicals and mixtures in the laboratory setting.

EPA agrees with comments that manufacturing, processing, or use of chemicals in a laboratory under the supervision of a technically qualified individual should be exempt from the provisions of this rule. This exemption is consistent with the exemption provided in rules implementing sections 311 and 312 of Title III, and the OSHA HCS. The exemption does not apply to specialty chemical production or pilot plant scale operations.

(53 FR 4503).

The preamble language in the OSHA regulations recognizes that not all pilot plant operations are closely connected with production processes:

In general, pilot plant operations are typically closely connected with production processes. . . . However, the rulemaking record suggests that, in some cases, pilot plant operations are an integral part of a research function [T]he pilot unit may consist of several small bench operations which are combined for the purpose of evaluating a particular effect. The operations do not always proceed to production but may remain part of the research activity.

(55 FR 3312).

With regard to specialty chemical production, EPA has made clear that "specialty chemical production refers to listed toxic chemicals produced in a laboratory setting that are distributed in commerce." (Q&A 297 in the 1998 EPCRA Section 313 Questions and Answers document, EPA 745-B-98-004, December 1998). Further, in 1998 Q&A 309 EPA stated that

toxic chemicals associated with the preparation of product samples are not eligible for the laboratory activities exemption:

309. A covered facility prepares a product that contains a listed toxic chemical for sample distribution. The sample product is prepared on a small scale and is distributed to potential customers for trial use. Would the amount of toxic chemical processed in the preparation of these samples be exempted from threshold determinations and release and other waste management calculations under the laboratory activities exemption (40 CFR Section 372.38(d))?

No. Amounts of listed toxic chemicals that are manufactured, processed, or otherwise used in conjunction with the preparation of trial samples are not excluded from threshold determinations and release and other waste management calculations under the laboratory activities exemption.

Your letter states that product development samples may be supplied to customers for evaluation purposes. Clearly, for those laboratory activities resulting in samples the toxic chemicals associated with the preparation of the samples are not eligible for the laboratory activities exemption. (See 1998 Q&A 309 and Q&A 297, *supra*). Further, it also appears that the laboratory activities exemption would not apply to those laboratory operations taking place at UOP that do not result in the production of samples. The quantities of chemicals being used and the turnover rate for those chemicals simply exceed the scope of the exemption EPA intended for laboratory activities. As stated above, the preamble language to this regulatory exemption makes clear that this exemption was intended to address "the potentially large number of mixtures and chemicals on-site in small volumes and the relatively rapid turnover of such chemicals and mixtures in the laboratory setting." (53 FR 4503) (Emphasis Added.) Your letter provides that all the laboratory units at issue use a number of gallons per day of at least one category of chemicals, liquid hydrocarbons. Further, the chemicals for laboratory usage are stored in a dedicated tank farm, with tanks ranging in capacity from 1,000 to 12,000 gallons. According to your letter, the turnover rate for the feeds stored in these tanks is two to five or more years. In short, while the scale of operations taking place in the laboratories at your facility is much smaller than the scale of operations being performed at the manufacturing component of the facility, the quantities of chemicals dedicated to the laboratory units and the long turnover rates for those chemicals exceed "the small volumes and the relatively rapid turnover" required by the laboratory activities exemption.

I hope this information is helpful to you in making threshold determinations and release and other waste management calculations for section 313 of EPCRA. If you have any other questions, or desire further information, please call either Larry Reisman at 202.260.2301 or me at 202.260.9592.

Sincerely,

A handwritten signature in black ink, appearing to read "Maria J. Doa". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Maria J. Doa, Ph.D., Chief
Toxics Release Inventory Branch