SQUIBB RCRA INCINERATOR PERMIT RENEWAL

HUMACAO, PUERTO RICO

RCRA FACILITY UPDATE

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As a part of EPA's commitment to facilitate public participation in the decision-making process for the Squibb incinerators permit renewal, EPA prepared this update to keep the public informed of the current status and important issues related to the permit renewal.

Recent Events

On September 25, EPA held a public meeting at the Humacao Community Center. The focus of the meeting was the incinerator risk assessment. Dr. Peter Grevatt, risk coordinator, and Sin-Kie Tjho, facility project manager, represented EPA at the meeting.

Reason for the Risk Assessment Meeting

EPA met with the public in the Humacao Community Center on March 13, 1997. The purpose of that public meeting was to inform the community about the status of Squibb permit renewal application and the incinerator permitting process. EPA also began to establish an open dialogue between EPA and the affected community, whereby they could participate in the decision-making process.

At the March meeting, one of the most pressing concerns raised was the health effects from the operation of Squibb incinerators on the local public and EPA's process of assessing health risk. A participant also asked EPA to perform an epidemiological study of Humacao residents to determine if they were already unhealthy. At the meeting, EPA explained that it uses risk assessment to determine if operation of the incinerator could impact human health. As discussed in greater detail below, EPA has established a process to evaluate potential health risks from combustion facilities. . This process provides for a facility-specific risk assessment, which takes into account local information in determining risk. EPA provides an opportunity for the public to comment on the risk assessment and raise their concerns.

In response to these concerns, EPA decided to hold another meeting dedicated to discussion of EPA's risk assessment process for combustion facilities and related health issues. On September 25, EPA held the follow-up public meeting specifically to discuss with the community in greater detail the health risk assessment process. EPA explained how the risk assessment for the hazardous waste incinerators at the Squibb facility addresses the health concerns the community raised.

Risk Assessment - EPA's new requirement for incinerator operating permit

When Squibb received its original incinerator operating permit in 1990, risk assessment was not required to study the potential health impact of the incinerator operation. To qualify for the operating permit, facilities were required to demonstrate that their incinerators could meet EPA's incinerator performance standards, which were based on technology, not health.

Since then, EPA has put into effect more stringent requirements that a company must meet in order to obtain a new incinerator operating permit or to renew an existing incinerator operating permit. For Squibb's permit renewal, EPA now requires not only that incinerators attain destructive efficiency, of 99.99% for organics and other performance standards, but that the emissions to the air will not result in an unacceptable health risk for the local population. The evaluation of health risk posed by the emissions is called "Risk

Assessment."

EPA is considering both the outcome of the Risk Assessment and the incinerator's ability to meet EPA incinerator performance standards to determine whether Squibb permit renewal should be granted.

We believe EPA's holistic approach in regulating incineration activities is protective of both human health and the environment, by addressing both the benefits of large scale destruction of hazardous wastes, at the same time, ensuring that human health is not adversely affected in the process by such operation. In order for EPA to approve Squibb's incinerator permit renewal application, Squibb must demonstrate that its operation of incinerators will not pose an unacceptable level of health risk to the local population.

Risk Assessment, what is it?

The Risk Assessment process provides EPA with the information necessary to determine whether the residual amount of waste released to the air by the operation of an incinerator will cause an unacceptable level of health risk to the local population.

In the assessment, EPA considers the toxicity and potential health effects from the chemicals that come out of the incinerator stack (toxicity assessment). The Risk Assessment also considers where the chemicals that come out of the incinerator go and how humans might be exposed to them (exposure assessment). Then the potential health risk is calculated using this information.

The Risk Assessment evaluates both direct and indirect pathways of human exposure to the chemicals released by the incinerator. An example of direct exposure is breathing any chemicals present in air that is emitted from the stack of an incinerator. Since airborne contaminants will eventually deposit on the soil, water bodies, and plants, an indirect exposure occurs when people consume or are exposed to the contaminated soil, water bodies and plants.

1. Exposure assessment In order to determine where the chemicals that come out the incinerator stack travel and what their concentrations are, the Risk Assessment uses an EPA developed air-dispersion model. The model predicts the effects of the weather, for example the wind, on how the chemicals emitted from the incinerators will be distributed.

In order to properly simulate the effect of local weather patterns and to more accurately predict the areal extent and distribution of the pollutants from the incinerator stack, the air-dispersion model uses locally collected weather data. With the exception o f upper atmosphere data (about 3000 feet above the ground level), the modeling performed for Squibb's incinerators uses the data obtained from the on-site weather station.

Hourly data of wind direction, wind speed, and other weather data (for example, temperature, barometric pressure, precipitation, dew point, etc.) was collected every day for an entire year. As a result, the air modeling considers all types of weather conditions that occur throughout the year. These conditions include those windless situations frequently observed in the early evening hours around the Squibb facility.

Based on these hourly weather data, the air-dispersion model calculates the levels of chemicals in air at various distances from the incinerator stack. These levels are used in the risk assessment as the concentrations that people may be directly exposed to by inhalation. The indirect exposure concentrations via soil ingestion, dermal contact, terrestrial food chain intake, surface water contact and dust resuspension are also derived from the air-dispersion model.

Because EPA wants to make sure that the health of the people who live around the incinerator is protected, the human health risk is estimated based on the highly conservative exposure scenarios. This conservative approach reduces the likelihood of under-estimating the health risk. To establish the potential exposure scenario, the point of maximum exposure is identified through the air dispersion model, then the individual who is likely to be the maximum exposed person in the area is identified (e.g., factory worker, subsistence farmer, child, etc.). Then a conservative level of exposure for this individual is estimated considering

both direct and indirect routes.

Maximum Point of Exposure takes into consideration for the simultaneous and continuous operation of the three incinerators. Although it is unlikely that all three incinerators will all operate at full capacity at the same time, this assumption is used to be cautious. The results from the air model for each incinerator are combined to determine the maximum level of exposure. The maximum point of exposure is not necessarily the location closest to the incinerator.

Maximum Exposed Individual is assumed to be one particular individual who could receive the highest actual or possible level of exposure. For the purpose of estimating health risk, the maximum exposed individual is used, although the risk to others would be less.

The maximum exposed person in Squibb risk assessment for the child population is a pre-school child who lives at the point of highest exposure downwind of the incinerator, who everyday plays outdoor and engages in vigorous physical outdoor activities and consequently breathes more air. In addition, it assumes this child eats contaminated dirt everyday at a rate associated with pica. Pica is a disorder that effects a small number of young children which causes them to eat non-food items, such as soil.

The exposure concentration is calculated using conservative exposure parameters for the most exposed individual identified by the dispersion model . This approach gives a very conservative estimate that is highly unlikely to underestimate potential health risks at the site.

2, Toxicity Assessment
The concentrations obtained from the previous section are used to calculate potential health risks associated with human exposure. Both carcinogenic (cancer causing) and noncarcinogenic health risks are evaluated for each chemical and for each exposure route. EPA maintains a database on the toxic and carcinogenic effects of contaminants. The information used in the risk assessment comes from this database.

3. Risk Characterization In this section, the results of Exposure Assessment and Toxicity Assessment are combined to determine the potential carcinogenic and non-carcinogenic risk to human health from the operation of Squibb hazardous waste incinerators. The current EPA guideline for excess carcinogenic risk at combustion facilities is no greater than 1 in 100,000 people. This means that if 100,000 people are exposed to certain hazardous chemicals for 30 years under highly conservative exposure scenarios, then there may be one case of person who contracts cancer as a result.

EPA believes that the process of health risk assessment of the operation of Squibb incinerators is protective of the health of people living in the Humacao area. If the Risk Assessment shows that the operation posed a higher health risk than EPA standards, then EPA must by law deny Squibb's permit renewal application.

Epidemiological Study and Risk Assessment

Regarding community's request for epidemiological study, EPA cannot perform such a study. EPA has met and discussed this issue with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR has agreed to look review a survey conducted by Professor Vasquez concerning the health of Humaco residents. EPA will keep the public informed of any progress of ATSDR's involvement. However, it is important to distinguish, as expressed during the public meeting, that EPA's health risk assessment process addresses the future health impact of Squibb's incinerators only, whereas, an epidemiological study would address the health consequence of past exposure of all possible sources and causes.

Schedule for Trial Burns .

The incinerator trial burns have been postponed and re-scheduled for December 8 through 20, 1997. If the trial burns can not be completed within the above time frame, Squibb will resume and complete the remaining trial burn activities after the

holidays on January 11 through 17, 1998. The public was formally notified of the schedule of the trial burn via local newspaper and radio announcement on November 12.

The purpose of the trial burn is to test incinerators' ability to meet all applicable performance standards set by EPA. The trial burn basically involves sampling and analysis of waste feeds to determine the input rate of each principal organic hazardous constituents (POHC), followed by sampling and analysis of stack effluent to determine the POHC emission rate. From the input and emission rate, the destruction and removal efficiency of the incinerator can be calculated. In addition, the stack effluent is also sampled and analyzed for particulate concentration, Dioxin, CO and the HCl emission rate.

In order for Squibb to conduct the upcoming trial burns, Squibb must seek prior EPA approval of a trial burn plan which contains a detailed description of how the trial burn will be carried out. EPA reviews the plan to ensure that the trial burn can be conducted in a manner that will generate the data necessary for determining whether the incinerator can meet EPA incinerator performance standards, the data necessary for health risk assessment, and for setting operating limits. The plan for the trial burn was approved by EPA in December 1996.

Both EPA and EQB personnel will be present, and monitoring the trial burn process.

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