Late Report Links Illness To Intel Emissions Plume

Written by Jeff Radford Friday, 23 April 2004 Second in a series

The validity of a health risk assessment which seemed to exonerate Intel from charges its toxic emissions are harming villagers' health is being further called into question.

The firm that carried out the risk assessment for the N.M. Environment Department (NMED) had cautioned that its findings were based on scant data.

Now a N.M. Health Department official has been asked to peer-review the assessment by Cambridgebased Gradient Corporation.

Health Department epidemiologist Len Flowers had been scheduled to give her critique of the Gradient health risk assessment on April 15, but that meeting of the Corrales Air Toxics Study task force was abruptly postponed. Her report was delayed when new data confirmed a link between reported health effects in Corrales and Intel's emissions.

A statement issued by Environment Secretary Ron Curry's office just hours before the meeting noted "In order to help come to scientific conclusions on Corrales' air quality, the N.M. Department of Health has offered to re-analyze a portion of the Corrales health risk assessment.

"This scientific examination of the chronic exposure risk assessment will help give the public and the Corrales task force the best, most complete, information available on Corrales' air quality. This work will take the Department of Health staff approximately two weeks."

No date had been set at press time for a re-scheduled report to the task force.

Despite the admitted shortage of emissions data, the Massachusetts-based consultant had concluded "the predicted short-term maximum concentrations provide some level of comfort that brief spikes in outdoor chemical concentrations do not result from sources at Intel."

The consultants arrived at that conclusion based on Intel's reported emissions rates two years ago, as well as air monitoring data collected last August, and on computer modeling for pollutant dispersion in the air.

But a later report by the computer simulation expert, Darko Koracin at the Desert Research Institute in Nevada, provided solid evidence that Intel was the source of pollution when villagers reported strong odors and/or illnesses.

The supplemented report by Koracin was presented by the Corrales Air Toxics project manager, Mary Uhl, at the task force meeting April 13. She reported that Koracin's latest modeling demonstrated that at the exact time when villagers reported air pollution problems to NMED in September 2001, meteorological data reveals that the wind was blowing to that location from Intel.

Uhl said there is a strong correlation between times when wind was blowing from Intel toward Corrales residents' homes and when adverse health effects were reported at those locations.

"This is the first time we've had evidence that Intel could be culpable," said Uhl, whose expertise is in air pollution modeling.

The pollution dispersion prediction program used by Koracin for his supplemental report was a Lagrangian random particle dispersion model which gives relative pollutant concentrations at various specific locations.

"What it was used for in this case was to simulate concentrations that occurred during complaints of September 2001 which were called in to the N.M. Environment Department.

"So a simulated receptor was located for the computer model at somebody's house... somebody called us and told us that at their house they had a complaint of odor or illness or both," Uhl explained.

"Darko modeled for Intel whether there were high concentrations, or whether the model predicted that there would be high concentrations at that location."

Using actual meteorological data from September 2001, Uhl showed a projection of the computer modeled emissions concentrations depicting a plume of high concentration going into a Corrales neighborhood east of Intel. "There were many receptors where Darko did see very good agreement between the times when the complaints came in and when the model was predicting high concentrations there."

Uhl said this was the first time the Air Quality Bureau had seen an analysis like this. "It provides very sound evidence that Intel could be culpable for the complaints that were called in.

"But these are relative concentrations," she cautioned. "We're not saying there was a violation of any standards here; we're not saying there was a violation of any permit conditions.

"All we're saying is that the complaint correlates very well with predicted high concentrations. Either this [complaining] person was able to predict very well what the model would show, or that this person is indeed, probably affected by higher concentrations coming from Intel... enough that they called NMED to report it."

She said Koracin's report shows that residents' complaints corresponded to predicted high concentrations of pollutants from Intel in eight of 11 instances modeled.

Uhl added: "It's strong scientific evidence that when we received this complaint from receptor number 5 [a Corrales home] and the model predicts high concentrations from the Intel facility, it's strong evidence that whatever caused the complaint" came from Intel.

Fred Marsh, a retired chemist working with Corrales Residents for Clean Air and Water (CRCAW) pointed out that the correlations found by Koracin fit the pattern that residents near Intel have reported over the years. "It's worth noting that in most of the cases where there is good or excellent agreement between residents' complaints and the model, it occurred during late evening or early morning hours when vehicle emissions are at a minimum."

That's an important point for Marsh because he disputes the contention by Intel's toxicologist, physician Don Fisher, that pollutants detected by air monitors last August originated from auto exhaust.

In the audience that evening to hear Uhl's presentation of Koracin's final report was the N.M. Health Department's Len Flowers who is assigned to review Gradient's health risk assessment.

CRCAW's Steve Martinez, an engineer and data analyst who lives near Intel, pointed out that whatever the toxic concentrations were in 2001, they are considerably higher now with Intel's Fab 11X operating.

Another task force member affiliated with CRCAW, physicist Peggy Everett, asked whether it would be possible to conduct similar modeling using meteorological data for 2003 when the Air Quality Bureau received many more complaints as part of the Corrales Air Toxic Study.

Uhl replied that would probably be too costly, since the recent data has not undergone rigorous quality control verification.

Koracin's report included a summary of the kinds of illness reported to NMED in 2001 when actual meteorological data indicated pollutant plume concentrations at those Corrales locations. Health effects report at those times were primarily burning eyes, nose and throat, respiratory distress, headaches, coughing, difficulty breathing, skin rashes and nausea. In most cases, those symptoms coincided with industrial odors.

The late modeling results from consultant Darko Koracin came as a dramatic, eleventh-hour twist to the task force's 16-month effort to determine what has caused illness reported by villagers over the past decade.

Several members of the task force had demanded that the Gradient health risk assessment be rejected as basis for the air quality study's conclusion.

Steve and Shari Martinez, who live near the Intel property line, produced a 12-page statement of objections to Gradient's findings. "The Gradient report should be rejected until an independent, external peer review has been completed," they wrote. They also argued that a risk assessment should include nuisance factors, such as offensive odors, and property damage due to corrosive emissions from Intel.

The couple faulted the Gradient study for using inappropriately high threshold values for when negative health effects should be expected from Intel's emissions. "NMED should have the health portion of the risk assessment re-evaluated based on more appropriate thresholds such as those used in Texas, in New Mexico's [screening levels for] Toxic Air Pollutants and in Office of Environmental Health Hazard Assessment reference exposure levels (REL) which are by design intended to protect the most sensitive portions of the population including children, pregnant women, the elderly and the chronically ill."

They criticized Gradient's use of Acute Exposure Guideline Level (AEGL) level 1 standards instead. "By using the AEGL level 1 thresholds, Gradient implies that is okay for citizens to experience occasional discomfort, dizziness, headaches, and eye, nose and throat irritation that is non-disabling.

"This is not acceptable!" they wrote.

They noted that the threshold levels used by Gradient were devised for once-in-a-life time exposures ranging from 10 minutes to eight hours. That's far different, they argued, from the 24-hour a day, every day, year around exposures that at-home residents near Intel receive.

"In an emergency, once-in-a-lifetime situation, it is probably acceptable to experience reversible symptoms such as dizziness, headaches, skin rashes and nausea while escaping the area," they wrote. "Unfortunately the local residents have nowhere to escape to when these toxic chemical soups containing dozens of potentially synergistic acting poisons... are spewed out under the cover of darkness at 2 a.m. while our children are sleeping and the evaporative coolers come on to take advantage of the cool desert night air.

"It is cruel and inconsistent with the mission of NMED to subject residents to these potential health effects on a continuing basis due to exposure to these repeated short-term toxic emissions that remain uncontrolled due to the lax nature of the Intel permit."

CRCAW's Fred Marsh faulted the Gradient findings because they are based on Intel-calculated emissions rates in 2001, long before higher emission rates began when Intel expanded with its Fab 11X facility. "The Gradient study is mainly based on Intel calculated data for 2001," Marsh reported to the task force. "Pollution and related illnesses are significantly higher since Fab 11X began operations in the fall of 2002, so Gradient used obsolete data for its study."

Furthermore, the retired Los Alamos labs chemist pointed out, "Gradient used emission values calculated by Intel based on emission factors that have never been independently verified by NMED. We continue to challenge such calculated values as unreliable."

In his critique of the Gradient findings, Marsh pointed out that "Two Intel whistle blowers have alleged that Intel knowingly releases hazardous quantities of toxic chemicals. These former employees lost their jobs when they refused to participate in an Intel management mandated cover-up. Their names are well known; yet Gradient made no attempt to interview either one of them."

(See Corrales Comment Vol. XXII, No.7 May 24, 2003 "Intel Insider Charges Cover-up on Toxic Emissions into Corrales" and No.10, July 5, 2003 "Second Intel Whistleblower Goes Public on Emissions Cover-up.")

He also faulted the health risk assessment for not seriously considering the heightened toxicity of some of Intel's chemical releases due to documented synergistic effects. "Synergistic interactions are known to be capable of intensifying the toxicity of chemical mixtures," the chemist noted. "Acetone and isopropanol, both released in ton quantities by Intel, are known to intensify the toxicity of other chemicals with which they are combined.

"Yet Gradient considered only carbon tetrachloride for synergistic effects. Residents are exposed to complex mixtures of many chemicals, which could lead to greatly increased toxicity of the sum of individual compounds.

"Yet Gradient chose to ignore such effects that we feel are the most likely cause of Intel's neighbors being so sick for so many years."

Marsh also pointed out that the Gradient consultants did not consider the health effects of Intel's release of toxic particulate matter. "That list should include silica, which is a cause of pulmonary fibrosis, a rare disease that has killed two Corrales residents who lived near and downwind from Intel. Yet Gradient made no effort to evaluate the health risk of particulates emitted by Intel."

The health risk assessment contracted out to Gradient Corporation was supposed to have been the final report to the Corrales Air Toxics Task Force before it issued a final report and recommendations.

Dozens of recommendations had already been proposed by task force members based on the Gradient findings. But those came prior to Koracin's final report on computer modeling of pollutant dispersion and prior to the N.M. Health Department's peer review.

The Health Department's Len Flowers is expected to concentrate on an area touched on lightly in the Gradient study: the long-term effects of constant exposure to Intel's pollutants.

The task force's final report and recommendations are now expected in late May or June.

All previously scheduled meetings of the task force have been postponed. Meetings set for April 26, 28 and for May 3 have been cancelled, and no substitute dates had been set at press time.