MEETING SUMMARY
Community Environmental Working Group

"Striving for Continuous Environmental Improvements at Intel"

Date: December 21, 2011
Time: 5:00–7:00 p.m.
Location: Corrales Senior Center

Members Attending
John Bartlit, Acting Chair, NM Citizens for Clean Air & Water
Mike Williams, NM Citizens for Clean Air & Water
Hugh Church, American Lung Assc. in NM
Sarah Chavez, Intel

Non-Members Attending
Roberta King, Corrales resident
Bill Davidson, Intel

Facilitator
Carmen Lowry, Facilitator
CJ Ondek, Recorder

HANDOUTS
- Draft Agenda
- Draft Meeting Summary November 16, 2011
- Action-Item Progress Report (none this month)
- EHS Activity Reports
- Intel report on EPA 114 follow-up process
- Media reports and articles, as available
- Water Dossier
- Wikipedia article on National Jewish Health

PROPOSED AGENDA
- Welcome, Introductions, Announcements and Brief Items
- EHS Report and 114 Update
- Corrales Water Task Force Report and Discussion
- Permit Revisions
- Spikes Update and Next Steps
- Additional Business
- Adjourn

WELCOME, INTRODUCTIONS, ANNUNCEMENTS, AND BRIEF ITEMS
John Bartlit opened the meeting by stating the CEWG mission, which was to work towards continuous environmental improvements at Intel and improved community dialogue. Introductions were made. Mr. Bartlit reminded the group that Stephen Littlejohn was absent from today's meeting and Carmen Lowry was facilitating the group in his absence.

Agenda—Revisions and Approval
No comments.

November 16, 2011, Meeting Summary—Revisions and Approval
No comments.

Chandler accident update
Sarah Chavez said she did not get an update from Thom Little on the Chandler accident, and Mr. Little was absent from today's meeting. If there was any update on the Chandler accident before the January meeting, Ms. Chavez said she would remind Mr. Little to send it via email.

ACTION ITEM: Sarah Chavez will remind Thom Little to send any updates he receives on the Chandler accident before the January meeting to the group via email.

ATSDR Update
John Bartlit said the ATSDR's Peter Kowalski communicated with Stephen Littlejohn to let him know that the ATSDR's report would not be released in 2011. Mr. Kowalski's group planned to provide a review and assessment of the NM Dept. of Health Report on the investigation of pulmonary fibrosis in Corrales as well as a review and comment of the STTF silica testing report.

National Jewish Health Update
John Bartlit referred to a handout, which was a Wikipedia article on National Jewish Health that highlighted their area of expertise, which was respiratory illness. Both John Bartlit and Hugh Church said that National Jewish Health had not contacted them yet. Mr. Church asked if they might be waiting to hear from the CEWG first. Mr. Bartlit said he told Geri Reinardy, board member of the National Lung Association in Colorado and employee of National Jewish Health, that the CEWG wanted National Jewish Health's input on respiratory illnesses in Corrales. Ms. Reinardy replied that Ms. Lisa Maier of National Jewish would contact him.

John Bartlit asked if Jonathan Samet's review of the NM Dept. of Health Report on the investigation of pulmonary fibrosis in Corrales should be posted on the CEWG Web site. The group agreed that it should be posted on the Web site if it wasn't already.

ACTION ITEM: John Bartlit will ensure Jonathan Samet's review of the NM Dept. of Health Report on the investigation of pulmonary fibrosis in Corrales is posted on the CEWG Web site.

Other Announcements
None.

Public Comment
None.

EHS REPORT and EPA 114 UPDATE
Sarah Chavez reported that Intel was still waiting for the EPA to respond on the 114 report. She reminded that she would continue to give verbal updates instead of paper until Intel hears from them. She referred to the EHS handout and said there was nothing of note on the report.

CORRALES WATER TASK FORCE REPORT AND DISCUSSION
Sarah Chavez said that Pat Clauser, a member of the Corrales Water Task Force, would not be able to attend tonight's CEWG meeting. Ms. Chavez said she did not know much about the Corrales Water Task Force, only that a group was looking at water use in the Corrales area. Bill Davidson said he did not know anything either.

John Bartlit said the first step was for a task force representative to attend a CEWG meeting where they could talk about each other's work and explore potential collaboration. Mr. Bartlit said the CEWG would continue to press for a meeting.

PERMIT REVISION

- Sarah Chavez gave an update on Intel's permit revision and referred to the corresponding handout. Because of new EPA regulations around greenhouse gas emissions, Intel was now a major source because its emission exceeded the greenhouse gas threshold. Greenhouse gases at Intel come from the combustion of fuels—natural gas and diesels—and some chemicals used in the manufacturing process called perfluorinated compounds, which are greenhouse gas precursors. EPA has a set of factors to use to calculate carbon dioxide or carbon dioxide equivalent. Ms. Chavez said Intel's biggest categories are combustion and fluorinated gases due to fuels burned and chemicals used in the manufacturing process.

- Mike Williams asked if Intel emitted nitrous oxide, which was also a greenhouse gas. Sarah Chavez said she would have to check.

- Ms. Chavez said that in some areas the EPA did not regulate all greenhouse gases, and over the years they changed how they calculated carbon dioxide equivalents and

conversions, so it was difficult to compare over time. Ms. Chavez said Intel had been reporting greenhouse gas emissions since 1995 as part of the semiconductor industry association that did a memorandum of understanding with the EPA. However, these reports did not match exactly what the EPA now dictated Intel to report. Mike Williams said the complicating factor in calculating conversions was that CO2 was long lived in the atmosphere, but other compounds, such as methane, was not as long lived.

- Sarah Chavez said that there were two pieces to the process: a permitting piece and a reporting piece. For reporting, Intel has to report annually via the EPA Web site. This year Intel sent in a report on combustion emissions. Next year Intel will report on both combustion emissions and fluorinated compounds. Ms. Chavez said that the EPA delegated permitting authority to NMED.

- Also, Ms. Chavez said that Intel's entire permit would be changed because once an entity became a major source of any single pollutant, it was considered a major source for any and all pollutants. Therefore, it did not matter that Intel was actually a minor source for NOx, it would still be treated as a major source.

- From a permitting standpoint, Ms. Chavez said Intel became a major source as of July 1, 2011, and had one year to submit a complete application for Title V. Title V, major source and operating permit are synonymous terms and used interchangeably. NMED regulated all companies in the state through issuing a construction permit, so when Intel was issued its major source permit, it also would still have a construction permit. Therefore, Ms. Chavez said, as a major source, Intel would be operating under two permits. Minor sources only operate under one permit—the construction permit, which had operating conditions.

- Roberta King asked about Intel's original permit. Sarah Chavez said the original permit was a construction permit because back in the early 1990s there was no designation between major/minor source. Intel then submitted a minor source application when the program started because it wanted to decrease its emission limits, and it was issued a minor source permit in 2000. Intel also submitted a major source permit application at that time but was never granted major source permit.

- Sarah Chavez said that NMED used templates for both construction and operating permits. NMED asked Intel to change its construction permit to fit into the new template. So part of the process would include Intel's changing its construction process to be in NMED template, which is similar for both the construction permit and the Title V permit.

- Ms. Chavez said Intel must submit a technical permit application to reduce the size of 5 boilers from 1250 boiler horse power (BPH) to 4 boilers at 800 BPH and 1 boiler at 200 BPH to accommodate for future 11X expansion if and when it happened. Intel planned to submit this application in January 2012. Ms. Chavez said these boilers only existed in the permit and not in actuality. Ms. Chavez explained that Intel had to change the permit because when it started the permitting process for the proposed expansion in early 2011, it did not know what size boilers were needed. Since then, Intel had learned what size boilers were necessary to stay consistent with Oregon and Arizona fabs, and the permit needed to reflect the accurate information.

- Roberta King asked why the difference between 800 and 200 BPH. Ms. Chavez said boilers operated together as one unit, and it was better to have a small burner running at a higher capacity, than a larger burning running at a lower capacity. The smaller boiler helped to "trim" the load. So having the two made the process more efficient.

- Sarah Chavez pointed to page 4 of the handout, which contained a portion of the NMED boiler permit template. She said NMED had a guidance document on boilers for Title V sources that stated the specific requirements, monitoring, recordkeeping and reporting to follow. Intel's boiler conditions would be put into a specific format, and these conditions would be consolidated in one location rather than spread throughout the permit.

- Ms. Chavez said Intel would issue a public notice about the permit revision and letters to counties and municipalities and area pueblos in early January. The first permit action in 2012 would be on the technical permit, and then Intel planned to submit a Title V permit application in early April to allow to correct for any problems before the July 1, 2012 date, when the application must be deemed complete by the NMED. Ms. Chavez said the application would be almost identical to what was submitted in the significant revisions, as NMED used the same application for both construction and Title V. NMED had 12-18 months to issue a Title V permit after it was deemed complete. Intel would continue to operate under its current permit until the new permit was issued.

- John Bartlit asked about the Title V public notice process. Ms. Chavez responded that she was not sure, but she knew that once NMED drafted a permit, they would issue a public notice, and this would happen much later in the process. Ms. Chavez said she would find out more about the public notice closer to April. Mr. Bartlit asked that Ms. Chavez keep the CEWG informed.

- Ms. Chavez said that Intel's Arizona and Oregon facilities would also become major sources, while Intel's Hudson, Massachusetts would be able to stay a minor source. The July 1 date was a federal requirement.

- Ms. Chavez referred to page 6 of the handout, and said that putting the construction permit into the template format would make it easier for the Title V permit process. This action would begin early 2012. Intel would also look at EPA areas of concern to incorporate into the permit change. Ms. Chavez said she would keep the CEWG updated on the process. For Title V permits, the EPA had a more official review process than other permits.

- Sarah Chavez asked how Intel should send out the permit application. The group said they definitely wanted to receive a copy of the permit application via email, and Ms. Chavez said she would work with Mr. Littlejohn to send to the email distribution list and possibly post it on the CEWG Web site. The first application, which was for the boiler updates, would be smaller and easier to email. However the Title V application would be much bigger and difficult to email—it would have to be broken into several pieces. Ms. King said she would prefer receiving the application via email rather than going to the Web site. Mr. Bartlit asked that Ms. King be given a hard copy.

ACTION ITEM: 1. Sarah Chavez will work with Stephen Littlejohn to figure out the best way to distribute the permit applications to the group.
2. Sarah Chavez will provide Roberta King with a hard copy of the permit application.

SPIKES UPDATE AND NEXT STEPS

- John Bartlit informed the group that Ralph Williams, consultant on modeling to Intel, had retired from his consulting company and did not want to work on the Spikes project. Mr. Bartlit proposed asking Mr. Williams to join the CEWG. Sarah Chavez responded that she understood Mr. Williams needed and wanted a break from this kind of work, which was why he did not want to work on the Spikes project.

- Sarah Chavez said that Class One Technical Service, which was the name of the consulting company Mr. Williams worked with, was still in business. Bob Powell was now the president and worked on Intel's onsite weather station; Paul Wade worked on Intel's modeling for the last few permit applications.

- John Bartlit said the CEWG had worked with Ralph Williams in the past, and the group respected him. Now that he was no longer available, he asked how the CEWG would like to proceed on the issue. He asked whether Mr. Powell and Mr. Wade would be willing to work with the CEWG on the Spikes issue and, if so, would that be acceptable to the CEWG and would Intel be willing to pay them.

- Sarah Chavez said that the group needed to figure out the scope and cost range of the project so Thom Little could approach Intel management about funding. Intel still contracted with Class One, she said. Mike Williams said that from his perspective, it would not make much difference using the other Class One staff. Since Ralph Williams had already set up the basic modeling parameters, Mike Williams said he had confidence in the results.

- Mike Williams gave an example of possible Spikes project action. He cited a 2009 ATSDR report that did not look at modeling but at measurements. One of the problems the report found was the average detection limit exceeded the chronic comparison value on some pollutants, so it was difficult to tell if the long term was consistent with the minimum value. Also, in some cases, the average detection limit exceeded the short term comparison values. Mr. Williams said that the FTIR could not address health effects because of detection levels. He said it might be useful to model hydrogen fluoride in particular, as well as other emissions from the same source.

- Sarah Chavez outlined some of the questions that needed to be addressed to set up the modeling process. These questions included the following: which compounds would the CEWG look at; which data would be examined, and how would that be different from what was already modeled in either of the risk assessments; would the CEWG look at modeling to get concentrations or health assessment values; and what would those health assessment values be.

- Mike Williams said he did not have knowledge on what the health assessment values should be, but he would like to learn how important Spikes were. He suggested looking at an increase by a factor of 10 in adjacent time periods, for example, if at 1 pm measurements showed a tenth of a part/billion, and at 2 pm measurements showed one part/billion, with factoring in wind and weather. Mr. Williams said he believed weather had a strong impact. He also said that he wanted to look at concentrations. Sarah Chavez said the CEWG needed to have a basis for emissions data to get the concentrations. Mr. Williams said it would be useful to use Intel's FTIR stack emissions data and assume two levels: (1) scrubbers were operating properly and getting minimum of 80% control efficiency and (2) scrubbers were in operative and there was no capture of hydrogen fluoride.

- Ms. Chavez emphasized that before the CEWG began any modeling, they would have to decide on what variables to include and what to base them on. Ms. Chavez expressed concern that people in the community did not believe in Intel's stack testing data, so no one would believe the modeling results based on stack testing data.

- Mike Williams said that with preliminary modeling they would not learn a "yes or no" on health effects, but they would learn which areas were worthy of more investigation. Ms. Chavez said Intel would need to see more specifics on the process.

- Mike Williams said the modeling might reveal an order of magnitude on the area of concern. He said there were two problems with the FTIR data captured in 2003-04 during July/August and in February. First, it only looked at a two-month period, and he wondered whether that period was really representative of one year. Next, the FTIR looked at 100 meters and its average, so wide swings from the average were not captured. One way to address this problem was to have closer locations, maybe every 25 meters.

- Sarah Chavez said that the data Mr. Williams mentioned was only one set of data collected at one point of time. Intel had collected much more data from the stacks. She said that the stacks were the best place to collect data since that was where the exhaust was emitted. Mike Williams said a good set of data included emissions and what the atmosphere did to emissions.

- Roberta King said that the cloud cover was also important to look at, since the clouds mixed with pollutants and became more hazardous when mixed with moisture. People complained most during these times, she said. Mike Williams responded that the nighttime situation was critical, since the ground sent heat to space, the temperature got colder and the emissions did not get mixed vertically but stayed close to the ground. This effect occurred during clear skies, he said.

- Mike Williams said he believed that weather played a major part in variations of concentrations, more so than emissions, but it was important to know emissions. The question was how well to do the modeling and how many resources to devote to it. Sarah Chavez said the CEWG needed to come up with a clearer proposal before answering the resource question. Now was the time to hammer out the details, outline the scope, and identify the end goal and how to ultimately use the data.

- John Bartlit suggested first proposing a useful first or second step, and based on that outcome, decide down the line whether or not to proceed. Mr. Bartlit asked Ms. King if working with Class One had any value to her with Ralph Williams gone. Ms. King responded that she had no idea. Sarah Chavez asked Ms. King how she would feel if the modeling had to be based on Intel's stack testing data. Ms. King responded that would have no value to her.

- John Bartlit said he envisioned, as far as health effects went, conducting air dispersion modeling and sending concentration-frequency-duration data to toxicology experts such as

National Jewish Health or ATSDR. Mike Williams said if emissions were the primary concern, they could set up the program similar to STTF to determine unbiased measurements made on stack emissions.

- Sarah Chavez said that she asked the question of Ms. King around trusting data from Intel or its contractors because what was the value of doing the work if the community did not consider the results valid. Mike Williams said the same was true of crystalline silica testing, yet they learned some valuable information from doing the testing. Ms. Chavez said funding was an issue, and FTIR testing would be much more expensive. Mr. Bartlit said that they had a huge break with STTF because NIOSH did the sample analysis for free.

- Roberta King said that she had a problem with Intel's funding the project, which was 100% contradictory to protocol. John Bartlit said that Intel paid Ralph Williams to conduct stack heights modeling. Ms. King said that was different. Ralph Williams was a scientist meeting with his peers—people interested in the science of the issue. She said she did not feel that he represented Intel.

- Mike Williams said he was uncertain on how to proceed. If no data was considered useful, then the Spikes committee could not make progress. So the simple thing to do was nothing.

- Sarah Chavez said she had to ask the fundamental question around starting points of data. She could see this project needing a lot of resources. It was not a small task, and even just figuring out which data to use would take a lot of effort.

- Mike Williams asked what emissions modeling Intel used for the risk assessment data. Sarah Chavez said she thought they used a combination of stack testing data and emissions calculations data. She would have to got back and look at the details. The time frame was 2003-04. Mike Williams said they would want to make it more current. Ms. Chavez pointed out that many parameters had changed since that time frame, and Intel's emission levels had decreased substantially also. Mr. Williams said taking into account the change in parameters was not hard to do.

- Mike Williams asked if Intel's meteorological data was available to the public and if it was in a reasonable format. Ms. Chavez said she believed it was available and would check on it.

ACTION ITEM: Sarah Chavez will check if Intel's meteorological data may be made available to Mike Williams and what kind of format it is in.

- Ms. Chavez said the hard part in this process was figuring out which data to use and how to compile it in a certain format. John Bartlit suggested using a placeholder for emissions. Mike Williams said it could be done using a normalized emissions number and then looking at the variations and patterns, including for wind and weather. Mr. Bartlit said they could take a normalized emission, compute what the weather did to it, and look at what would happen if the abatement equipment failed. Ms. Chavez said Intel had 7 thermal oxidizer stacks and 20 scrubber stacks in different locations, so how would they figure out which ones to use. Mr. Williams said they could figure in as many locations as needed. Mr. Bartlit said that by using normalized emissions, a lot could be learned quickly around variations of ground level due to weather. He suggested that most of the variation was most likely due to wind.

- Roberta King asked if the different scrubbers were scrubbing for different parts of the chip processing and scrubbing different chemicals. Ms. Chavez said "yes and no" and explained that three different sections of the factory were connected to a different set of scrubbers. She said that looking at the data from all the scrubbers would show variations in chemicals scrubbed. John Bartlit asked if the variations were small compared to tenfold change. Ms. Chavez said she did not know because Intel did not look at this data that closely. Intel tended to look at annual information rather than short-term variations. Ms. Chavez said that the data was in Excel format, which was easy to analyze.

- Roberta King asked if it were possible for a synergistic effect to occur with different chemicals scrubbed in before getting out the main scrubber. Ms. Chavez responded that that they would see the results of that during stack testing. The EPA had requirements around where to place the test port so there was enough mixing, and Intel met that requirement on the outlet stacks of the scrubbers. Ms. Chavez reiterated that she was concerned about using Intel's data because it was not considered valid by the community. Mike Williams agreed that there would be no point in continuing if this were the case.

- John Bartlit suggested as first step starting with normalized emissions and learning about variability with weather and downtime. Roberta King said one of the first questions asked by the Spikes committee was to see if this was even feasible. Mr. Bartlit said that if the data was not believed, if was too complicated and expensive, and if they did not have confidence in Class One, then it was not feasible. Mike Williams suggested he might be able to do all the modeling.

- Roberta King said that Lane Kirkpatrick's quest into this issue was not based on whether or not she, Ms. King, believed the data, but on others in the community. Mr. Bartlit said enough people in the community also did not believe Intel's data. Sarah Chavez asked if

it was worth doing if a certain amount of the population did not believe the data. The FTIR testing would be more expensive than the STTF testing.

- John Bartlit suggested that he and Mike Williams contemplate the idea of normalized testing and what could be learned about that, both on the weather and abatement equipment. Mike Williams said he could do the work in a short time and for minimal cost, but he would need to know what forms of meteorological data Intel had and whether or not it was available to him.

- John Bartlit summarized that for now, the CEWG would not approach Class One other than to get the meteorological data.

- Carmen Lowry asked if the group was clear on next steps. Mike Williams responded that half the Spikes committee and its leadership were not present at the meeting. John Bartlit asked if anyone objected to proceeding in this way. Sarah Chavez said that she would like to see a more detailed plan on normalized emissions in the January meeting.

  DECISION: For next steps on Spikes, the group agreed to Mike Williams and John Bartlit investigating normalized emissions.

  ACTION ITEM: Mike Williams and John Bartlit will present a detailed plan around normalized testing at the January meeting.

- Sarah Chavez asked Mike Williams how he would look at the RTOs. Mr. Williams said he would focus on hydrogen fluoride, which came from scrubbers. He wanted to know what the scrubbers were doing, as the CEWG has not looked at scrubbers yet. He said that he wanted to get back to baseline modeling so the CEWG could show they were making continuous environmental improvements. Also, he was interested in looking at nitric acid, but that was more complicated.

ADDITIONAL BUSINESS

Hugh Church asked if he should call Geri Reinardy about National Jewish Health. John Bartlit suggested following up with her to see if the CEWG was going to hear from National Jewish Health. He said he would send Mr. Church the last email exchanged between them.

ACTION ITEM: John Bartlit will forward the last email he received from Geri Reinardy to Hugh Church for reference.

MEETING ADJOURNED

NEXT MEETING
January 18, 2012, 5 p.m. at the Corrales Senior Center in Corrales.

DECISION SUMMARY: For next steps on the Spikes issue, Mike Williams and John Bartlit will investigate normalized emissions and present a plan on how to move forward at the January meeting.