

MEETING SUMMARY

Community Environmental Working Group

“Striving for Continuous Environmental Improvements at Intel”

Date: December 18, 2013
Time: 5:00–7:00 p.m.
Location: Corrales Senior Center

Members Attending

John Bartlit, NM Citizens for Clean Air & Water
 Mike Williams, NM Citizens for Clean Air & Water
 Hugh Church, American Lung Assc. in NM

Sarah Chavez, Intel
 Robinson Shields, Rio Rancho resident
 Dennis O’Mara, Corrales resident
 Lane Kirkpatrick, Corrales resident

Non-Members Attending

Lynne Kinis, Corrales resident
 Natasha Martell, Intel
 Roberta King, Corrales resident

Mark Bennett, In-coming Facilitator
 Cassie Roberts, Intel

Facilitator

Stephen Littlejohn, Facilitator

CJ Ondek, Recorder

HANDOUTS

- Draft Agenda
- Draft Meeting Summary November 2013
- Action-Item Progress Report
- EHS Activity Reports
- Media reports and articles, as available
- HF Update Report
- Code Red Report
- Chandler Accident Report

PROPOSED AGENDA

- Welcome, Introductions, Announcements and Brief Items
- EHS Report and EPA 114 Update
- Code Red Report
- HF Discussions
- Additional Business
- Adjourn

<p>Filename: CEWG_Meeting_Summary_12-18-13, v. 3.doc. Approved: January 22, 2014 Prepared or presented by: CJ Ondek & Mark Bennett Prepared for: CEWG Date prepared or presented: January 22, 2014</p>

WELCOME, INTRODUCTIONS, ANNOUNCEMENTS, 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.

Agenda—Revisions and Approval

Stephen Littlejohn added to the “Other Announcements” section the possibility of changing the January meeting date.

Meeting Summaries—Revisions and Approval

No comments.

Agency for Toxic Substances and Disease Registry (ATSDR) Update

John Bartlit said he had spoken with Peter Kowalski for about 30 minutes on December 17. Mr. Kowalski had told him he had received in-house comments that he then incorporated into the ATSDR’s draft report. Before sending the revised draft report to the Environmental Protection Agency (EPA), New Mexico Environmental Department (NMED), and New Mexico Department of Health (NMDOH) for comments, he planned to have a conference call with the EPA to ensure he included their most recent information into the report. For the same reason, Mr. Kowalski asked to receive the following five CEWG documents: Code Red report and presentation slides; HF modeling draft report and presentation slides; and NMED’s presentation slides from the November CEWG meeting. Mr. Bartlit said these documents were sent to Mr. Kowalski electronically. He also reported that Mr. Kowalski read the CEWG Web site, was on the CEWG distribution list, and was interested in attending tonight’s meeting by telephone, but last minute family matters prevented it. He still may attend a meeting in the future. Mr. Kowalski’s next step is to send the revised draft to the EPA, NMED, and NMDOH for comments; they would have three weeks to respond. Mr. Bartlit and Mr. Kowalski would talk again in January.

- Lynne Kinis asked why the ATSDR needed to consult with the EPA since it was ATSDR’s report. Mr. Bartlit said the ATSDR was not required to consult with the EPA, but Mr. Kowalski wanted to talk with as many people as possible, which was positive. He said that Mr. Kowalski had shown greater continued interest than anyone he had met in a long time.
- Stephen Littlejohn said it was important and remarkable to note that the CEWG took leadership in pressing the ATSDR to finish the report. First, Dennis O’Mara had suggested contacting the New Mexico Congressional Delegation to put pressure on the ATSDR; John Bartlit and Mike Williams followed up on this suggestion; and then Mr. Bartlit developed a working relationship with Mr. Kowalski.

Regulatory Engineering Update

John Bartlit said he would meet with Intel engineers in the first half of January to brainstorm about regulatory engineering. He would inform the CEWG about the outcome. Mr. Bartlit explained that the goal of regulatory engineering was to get new and more information cheaper, easier, and quicker. He said regulatory engineering was a great opportunity to get more meaningful information for less money.

Other Announcements

Stephen Littlejohn asked the group how they felt about changing the January 15 meeting date to January 22, since it was so close to the holidays. No one objected. Mr. Littlejohn said he would place the new date in the meeting advertisements, and Mark Bennett, the in-coming facilitator, would include the new date in the CEWG newsletter. They would have to contact the Corrales Senior Center about changing the date.

CONSENSUS DECISION: The CEWG January meeting date will move to January 22.

Public Comment

Dennis O'Mara said he had a letter from a neighbor addressed to Daren Zigich that he wanted to read for the public record, but he had not gotten the permission from the author to read it. The letter was an example of the community's concern about emissions at Intel.

Mr. O'Mara proposed several agenda items for upcoming meetings.

1. On the CEWG Web site, the mission statement said: "*Striving for continuous environmental improvement at Intel.*" He recommended having a discussion about adjusting the mission statement to read: "*Striving for continuous environmental improvement **by** Intel.*" Mr. O'Mara said the way the mission was currently worded did not embrace what was happening outside Intel's fence line. In his opinion, "by" was more inclusive of the community. He also mentioned that the Web site needed to be amended to reflect the in-coming facilitator as well as the CEWG having only one Intel member not two.
2. Mr. O'Mara said the second item he would like to propose as an agenda topic was "what happens to pollution from Intel stacks from rain, sleet, hail or snow storms?" He was prompted to think about this during the recent snowstorm.
3. Mr. O'Mara read a statement posted by Barbara Rockwell from the Boiling Frogs blog dated July 7, 2013 (web address: **boilingfrogs-intelvsthevillage**.blogspot.com). The title was "Thirsty Intel."
As we enter the third year of extreme drought, inquiring minds must wonder driving by Intel's massive factory "How much water are they using?" They might be surprised to

hear – if they can find someone who will tell them –it’s approximately 3 billion gallons a year. That’s right – ‘Billion’ with a ‘B.’ This is not a fact that you will hear disclosed or discussed in any of our local media at any time. There is an effective blackout on this topic, such is Intel’s power over the media and the State of New Mexico. Intel has its very long straw deep into our declining aquifer – three 2,000 ft. wells drilled in the early 90s. At the time Intel claimed that its wells were drawing from a ‘different aquifer’ that was not connected to the aquifer from which the rest of the valley draws its water. Nonsense, replied hydrogeologists not on Intel’s payroll, all of the aquifer is interconnected. Intel needs super pure water for its process. It uses reverse osmosis, which rejects two-thirds of the water it pumps. This mineral-laden and probably acid-laden water is discharged to the south valley treatment plant. I say ‘probably acid-laden’ because friends who live near the treatment plant report smelling the familiar ‘Intel smell.’ The solution to pollution is dilution. Many people believe that Intel is reinjecting water into the aquifer. This is not true. It was proposed at one time, but it is not feasible. What was feasible and was tragically rejected by Intel is a clean method to make chips that was developed at Los Alamos Labs in 2001. The new technology, called SCORR uses carbon dioxide at high temperature and pressure for photoresist removal that leaves the silicon wafer bone-dry and free of any dirt, eliminating the need to rinse with ultra-pure water and dry with alcohol. It’s a closed-loop system that all but eliminates the use of hazardous corrosives and the production of wastewater. It would reduce Intel’s water use by a factor of ten, to less than 10% of current usage. Intel did not welcome this breakthrough with open arms. Craig Taylor, the developer from LANL said he repeatedly called the Intel Rio Rancho site manager and his calls were not returned. Finally in 2005, Intel’s research director reported that Intel had actually tested SCORR: “We found good results, and sometimes equivalent results, but we didn’t find anything that was performance enhancing.” As if saving billions of gallons of water and eliminating toxic emissions is not ‘performance enhancing’!

Dennis O’Mara proposed inviting Craig Taylor to a CEWG meeting to discuss the SCORR system. The SCORR was first published in August 2001 in a journal called *Environmental Health Perspectives*. Mr. O’Mara had a paper on it as well as a brief discussion and benefits.

- Sarah Chavez said the CEWG had a panel on this item in the past, more than five years ago. Dennis O’Mara said he would like an update on SCORR, such as who was using it, what were the advantages, etc. He said it would be interesting and useful to have an update and to resurrect the panel.
- John Bartlit said Craig Taylor was a neighbor and was willing to approach him. Stephen Littlejohn said the CEWG would need to have this topic as an agenda item for discussion first before moving forward with any action. Mr. Bartlit suggested finding the information

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from a past meeting summary and distributing links to it for further reading. He reminded about the CEWG's water dossier.

ACTION ITEM: Stephen Littlejohn will research past meeting summaries to find information on water and SCORR to share with the group.

- Lynne Kinis said she felt strongly that it would be worthwhile to have Mr. Taylor present again because he might have new and different updates on the issue, and especially because of the water situation. John Bartlit said the past panel had three 3 experts: a Californian, Texan and Craig Taylor. Mr. Littlejohn said this topic could be explored, and the group needed to discuss when to put the items on the agenda, how to frame the topic, and whether to have a speaker or panel.

EHS REPORT AND EPA 114 UPDATE

Sarah Chavez gave the EHS Report for November and December. She said there were no odor complaints, a few regulatory submittals, and cranes operating in November. Both months' reports were short. Lynne Kinis asked for clarification about the "Letter to Zone 2 Neighbors." The letter was sent to people who had previously contacted Intel, Ms. Chavez confirmed, and she also met with these individuals.

Sarah Chavez discussed the official report about the incident at the Chandler, Arizona, plant this past summer, which was in the handouts. The report was written by Intel to the Arizona Department of Occupational Health. The root cause was human error that resulted in a particular tool leaking. Intel responded by stopping the flow of gas to the tool, fixing the tool, checking the other tools, and forwarding the information to other sites so they could check their tools. The tool leaked inside in sub fab, which led to evacuation. People exposed to the chemical became sick and were taken to hospital.

- Dennis O'Mara asked when the report was written and submitted. Sarah Chavez said she would have to check the date. She did not officially request the report until after Mr. O'Mara did the Code Red presentation. Mr. O'Mara also asked when the lessons learned were shared among other Intel facilities. This issue was a major concern in the Code Red report.
- Ms. Chavez responded that Intel shared what they learned immediately with other sites and requested staff check their systems. She said she would need to find out the specific process Intel used to share events across sites, and how Intel Rio Rancho implemented this information. Dennis O'Mara said he would research the exact dates of the accident, the CEWG discussion about the incident, and the Code Red report research. He said Intel Rio Rancho in-house emergency manager did not have information about the incident at the time of the Code Red committee's interview. He said he would check the dates to make

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sure that Intel was responding in a timely manner consistent with Code Red requirements. Stephen Littlejohn said this item would be up for further discussion next month.

ACTION ITEM: Sarah Chavez will research the specific process Intel uses to share events across sites, and how Intel Rio Rancho implements this information and report back to the CEWG.

CODE RED

Stephen Littlejohn opened the next discussion item, which was Code Red Report recommendations. The recommendations were:

1. What recommendations does the CEWG have for public education about Code Red?
 2. What criteria should Intel use to decide when to notify first responders? Public agencies do not have firm criteria for when to notify the public of emergency situations because each situation is different. What recommendations on guidelines does the CEWG have that Intel might use on when to go public?
 3. Does the CEWG want to learn more about statutes governing emergency response and their possible implications for emergency action at Intel?
 4. What other next steps and recommendations does the CEWG want to make?
- Lane Kirkpatrick suggested looking at the criteria for Intel's treating an incident as an internal OSHA-related incident versus when it was in the interest of the general public. Sarah Chavez said there were regulations that dictated when a company had to notify OSHA and when it became a public issue. John Bartlit said if Intel called in community resources then the command of that incident passed over to community responders, such as fire and police.
 - Dennis O'Mara said that Intel's single point of contact was the Rio Rancho emergency response center. The issue was that the community notification system could not be activated until officials were made aware of an incident first. Any delay in Intel's notifying emergency response might result in chemical fumes leaking out and overwhelming the public. He said he had spoken with Chandler Fire Department officials. They said they had a Code Red system but did not activate it during the incident because they had equipment that monitored the situation, and the monitoring did not show an issue with the air. Mr. O'Mara said he was trying to learn what that equipment was and if emergency responders here had the same equipment.
 - The accident occurred between 6 and 7 am, and a report by *The Arizona Republic* was posted at 3:15 pm. This report said they did not know what happened. Mr. O'Mara said he was working to learn more about that incident and the equipment the Chandler Fire Department used.

- Stephen Littlejohn said it would be interesting to learn what criteria Chandler used to call the Fire Department versus handling it in house. John Bartlit said workers were getting ill. Dennis O'Mara said they had asked Brian Rashap that same question, and Mr. Rashap responded that they did have criteria but they could not share it. Robi Shields pointed out that the occupational health nurse made the call to emergency responders, as per the report's timeline. It was also mentioned that the timeline included in the report was impressive and needed closer examination.
- Sarah Chavez said that the Intel Rio Rancho plant conducted drills and simulated scenarios with emergency responders.
- Lynne Kinis said the point they were trying to make in the Code Red Report was about the community and how long would it take to notify them.

ACTION ITEM: Dennis O'Mara will complete research on the Chandler Fire Department and share what he learned with the group.

- Stephen Littlejohn said they could not discuss the second bullet—what criteria should Intel use to decide when to notify first responders—until they had more information.
- Lynne Kinis said she remembered from the interview with Intel that they had a system of criteria, but it all depended on many variables, and Brian Rashap was reluctant to share this kind of information, although he did say that they shared this information with responders. Stephen Littlejohn added that the point was that each case was different, so there were not standard set criteria to follow. However, there were guidelines and general criteria the CEWG wanted to encourage Intel to follow. CEWG could still make recommendations irrespective of Intel's current process. For example, a medical practitioner in Chandler made a judgment on when to call first responders, and this sounded like she was following a criteria or guideline.
- John Bartlit said the CEWG should look into the statutes related to emergency conditions, and that Daren Zigich recommended this as well. Mr. Bartlit suggested speaking with Mr. Zigich about how they should move forward with this issue. Dennis O'Mara said he would do Internet research. Sarah Chavez said she would look at what information Intel had about statutes.

ACTION ITEMS: On government statutes related to emergency incidents, John Bartlit will speak with Daren Zigich; Dennis O'Mara will conduct Internet research; and Sarah Chavez will check out information at Intel.

- Stephen Littlejohn asked how the CEWG could collaborate with Intel and emergency response personnel to design and implement a public education campaign. John Bartlit suggested putting something on the Web site and in newsletters. Dennis O'Mara said there were vast differences between Rio Rancho and Corrales in terms of public education, and he suspected it was different across the county. He was hoping to have a standardized education campaign across the county; it might be repetitious in some areas and eye opening in others.
- John Bartlit asked if the first responders welcomed the CEWG's help with educating the public. Lane Kirkpatrick said he detected that their helping get the word out was a good thing to do. Dennis O'Mara added that the CEWG should not put a lot of burden on them but to still seek their input. Mr. Kirkpatrick suggested an open house at the Rio Rancho Emergency Response Center, a place where the public could actually visit. He said it was difficult to get people engaged, so they would have to "put a little zip and pizzazz" into it. Mr. Littlejohn said it could be an open house and public meeting. Robi Shields said that in the latter two events, they could get the news media involved at no cost and then get the media to put Code Red links on their Web sites as a way to leverage traffic. Mr. O'Mara suggested they might be willing to send a countywide Code Red message to everyone letting them know about the system in place.
- Stephen Littlejohn asked if the recommendation to further educate Sandoval County residents about Code Red was in the CEWG's mission. Was it the best use of the CEWG's time to deal with the entire county, or was it more in alignment with the mission to deal with local, such as Corrales and Rio Rancho?
- Lynne Kinis said that in every Code Red meeting, she talked about the local community in regards to Intel. In that respect, to make individuals and the local affected community aware was part of the mission. Code Red personnel have done what they could do as far as notifying people how to sign up, and she was impressed with their system. Rio Rancho even conducted mock situations. Dennis O'Mara said Rio Rancho was vague on the question around promoting the Code Red system and community awareness, while Corrales Fire Department did five or six different things to make the community aware. He suggested taking a two-tier approach, which was to focus on the immediate local area but without expending resources prompt other efforts further out.
- Stephen Littlejohn said one of the CEWG priorities for next year was to move toward a task force/committee base structure similar to stack heights and crystalline silica. The Code Red project also was an example. He asked if the group wanted to continue with the Code Red Committee and others who wanted to be involved to go deeper into the issues and bring new recommendations to the CEWG. John Bartlit added that the Code Red committee could remain the central force, but others could add to it as they learn more

information. Dennis O'Mara said he would be happy to continue working with Lynne Kinis and Lane Kirkpatrick, and if any other members were interested to let him know.

HF DISCUSSION

Mike Williams gave a presentation on the HF modeling draft final report.

- Mr. Williams used a slide show—beginning at slide 17— that showed a graph of boundary receptors, sources, and the highest concentrations during 19 one-hour spike events out of 150 possibilities over three years. The slide showed the locations, with the color purple indicating receptors on the fence line. The screening level was 15 ug/m³ (15 micrograms per cubic meter). The Universal Transverse Mercator mapping coordinate system, X axis indicated the east direction and the Y axis was the north/south direction.
- Slide 18 was an illustration of spikes with constant emissions modeled for a single receptor. Mr. Williams said the place on the graph at “7 ½” was the concentration at ground level. This graph highlighted a point on the previous map over a 24-hour day. The increase was sharp in a short period, and none of the incidents would be detected by human nose. Odor threshold was only a couple of minutes.
- Lane Kirkpatrick asked Mr. Williams to clarify on the slide that the spike was a one hour average and did not exclude a short term event. Mr. Williams said he would do so.

ACTION ITEM: Mike Williams will add a note to the slide that it did not exclude a short-term event.

- Mr. Williams discussed his modeling conclusions in Slide 19. These conclusions were:
 1. EPA approved model estimates HF concentrations lower than the screening level
 2. Receptor locations were sufficiently close to one another that the results are not sensitive to the choice of receptor locations.
 3. Measured emissions showed more variation with time than expected, but not enough to change the conclusions, around 35% or so.
 4. However, the modeled concentrations did not provide a large margin for error so that further examination of the role of model options might be advisable
 On conclusion 4, Mr. Williams said he used median emissions, but even if he took the highest emission, it still would not push it above the threshold.
- Mr. Williams went through the possible next steps, which were listed on slide 20.
 1. Rerun model without “beta” option (**hold space to insert definition or reference**)
 2. Use old tracer measurements to check validity of plume downwash model

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3. Examine other pollutants released by the scrubbers and scale to obtain model estimates for them

Mr. Williams said he could run the model using old tracer measurements. In this case, ERM put a tracer in one stack so they knew the concentration in an open path FTIR, and then compared it to other models. ERM actually did two models--one like the model now, with an approved option for treating downwash, and the other was an older model. The downwash models had factors of more than 2. Mr. Williams said another option was to go through and recalculate other pollutants released by the scrubbers, since they hadn't looked at scrubbers previously, and HF came only from scrubbers. They could get answers faster by looking at the scrubbers. Lane Kirkpatrick said, from the standpoint of public exposure, to review what else could cause odors or respiratory irritation to get the big picture, and then look at what should be done next.

- Mr. Williams outlined on slide 21 why the downwash model was important.
 1. The manner in which buildings cause dilution is very important in near source concentrations
 2. Risk Assessment reports maximum HF hourly estimated concentrations of 12ug/m³ for Prime downwash (**add model designator**) (used in our modeling) versus 33ug/m³ for Schulman-Scire downwash (tables A-4 & A-5)
 3. Risk Assessment describes comparison between modeled and measured concentrations and prime model underestimated measurements by a factor of 2.2 while Shulman-Scire underestimated by 1.12 (for highest tracer measurements, table 4-3)

Mr. Williams said these were relatively low plume sources: cold plumes and the stacks were not two and a half times larger than the buildings. Most important was how to treat the downwash. The risk assessment used the downwash system estimated at 12ug/m³. The older system used 33ug/m³, which was a large difference and why Mr. Williams was proposing to look at the tracer data. Mr. Williams clarified that he used the maximum measured concentrations.
- He went on to look at the difference between Intel's risk assessment (RA) and the current work on slide 22.
 1. RA used occupational limits divided by a factor of 100 for acceptable level of 25ug/m³ versus 15ug/m³ (at altitude)
 2. RA had different source configuration
 3. RA used higher emissions, RA had a rate equivalent to 12,603 pounds per year (table 3-4) while our rate is 5287 pounds per year.
 4. RA used CalPuff model, I used AERMOD
 5. I used 3 years of recent meteorological data and they used older data

Mr. Williams said the risk assessment used occupational hours limits, which was 8 hours maximum for worker exposure. The risk assessment also used higher emissions than Mr. Williams' modeling. John Bartlit asked, generally, if emissions at Intel were lower now

versus when the risk assessment was done. Sarah Chavez said yes but she would need to check on the exact ratio. The technology had changed and Intel kept trying to reduce emissions.

ACTION ITEM: Sarah Chavez will check if Intel emissions were lower now versus when the risk assessment was done.

- Mike Williams reported on possible next steps, which he outlined in slide 23. These were to:
 1. Examine other contaminants from scrubbers
 2. Rerun without beta model
 3. Compare new AERMOD with old tracer measurements
 4. Conduct and compare HF measurements with AERMOD estimates
 Mr. Williams went on to examine each of these items more closely in the next few slides.
- Mike Williams detailed estimations for other contaminants in slide 24, which would include the following steps:
 1. Examine risk assessment & ATSDR reports to find candidates
 2. Choose appropriate screening levels
 3. Ratio emissions to HF and estimate concentrations
 4. Downwash concerns remain
- In slide 25, Mike Williams outlined the possibility of rerunning the model without the beta options.
 1. Requires rerunning meteorological model with new inputs.
 2. Probably not much change
 3. Downwash modules still a concern
- Mr. Williams looked at comparing AERMOD results to old tracer measurements in slide 26.
 1. Make revised model inputs—emissions and meteorological inputs
 2. Represents only 2 months meteorology
 3. Source configurations are much different
 Sarah Chavez said when they did the tracer comparison of downwash they put the tracer in one stack and measured at the fence line, and then they modeled a single stack as a way to isolate conditions. Mr. Williams said downwash brought emissions down to the ground quicker and spread it. With one source, there were no effects, but with 22 sources they would see effects, such as a different time profile.
- In slide 27, Mike Williams looked at measuring HF concentrations in the future and compared to futures estimates.

1. HF emissions must be estimated
2. Can the FTIR sampling be done with adequate minimum detection levels
3. Where could the resources to support such a study be obtained?

Mr. Williams said that estimating HF emissions might have significant uncertainties. Also, the ATSDR said, in some cases, the minimum HF detection levels were higher. Sarah Chavez said with path FTIR the detection limits might not be able to be as low, and assumptions about wind direction were important. Ms. Chavez clarified HF emissions uncertainty. When Intel did stack sampling, they captured data on an hourly basis; the shortest timing frame to calculate emissions was monthly. So they would have to take testing over a month, and although it could be done it would not be as accurate. She said that this option provided a lot more uncertainty than the other options, and then there was the question of whether Intel was the only source of HF in the area.

Stephen Littlejohn said the group would probably want to discuss each of Mr. Williams' recommendations, but since time was limited, he opened the floor for questions and a general discussion.

- Lane Kirkpatrick asked what Mr. Williams learned and what it mean with respect to the public concern. For example, how conclusive was the modeling or what kind of knowledge or predictability with respect to understanding spike problem better? What did it all mean? Mike Williams said he did not address the odor issue in his study. Getting into health effects raised a lot of uncertainty. John Bartlit said that, while we are discussing potential uncertainties found near a threshold value, it is also true the modeling gives great certainty that the highest modeled level is never many times higher than the threshold value, which the modeling would have found if it occurred Also, Mr. Williams pointed out that the Texas screening level researchers divided by 30 and not 100 because it was not clear if there was a true health effect. Two things to worry about was sample size and the other what kind of people were involved in the test, especially health and age.
- Lynne Kinis asked Mr. Williams if he factored 22 stacks into his calculation, since he mentioned the data was based on one stack. Mike Williams said that data was only used to compare how well his model did. While results were more consistent, it turned out the model he used underestimated by a factor of 2. John Bartlit added that Mr. Williams modeled from all stacks but didn't use the tracer data in his calculation, and instead used it for comparison purposes.
- Lynne Kinis asked about the ATSDR data and physical reactions and if that was based on an 8-hour worker exposure. Mr. Williams it was one hour. Ms. Kinis asked about residents and 24 hours. Mr. Williams replied in that case the residents were only exposed for a little more than one hour. Ms. Kinis said when residents called Intel about an odor, and when the Intel representatives arrived it was gone. Mr. Williams said he did not model

the odor question but used it for context. These models assumed that looking into a situation long enough would allow for fluctuations and then average out. More sophisticated models would look into smaller time periods—usually 3 minutes—that would capture the plume moving back and forth; then the concentrations could be much higher.

- Dennis O’Mara said it sounded like, based on these results, the HF concentration levels for any one hour period would not cause someone to have a serious health issue, in comparison to the screening levels that apparently did not cause the individuals exposed for that period of time to have any health issues; but none of this addressed what happened to people living downstream for 30 years with consistent exposure. No one knew, and these levels that companies were allowed to emit were just guesses or hopes, Mr. O’Mara said.
- Mike Williams said he picked this model because it looked at problems for short-term concentration, but there were models that looked at long term. Sarah Chavez added that the risk assessment looked at both long and short terms. Mr. Bartlit said that in this model the worse spike occurred once in 3 years; it wasn’t day after day or week after week, so in 30 years there might be 10 of these spikes.
- Lane Kirkpatrick emphasized that the public needed to understand the meaning of this kind of modeling, including a sense of probability.
- Mike Williams said he believed the longer-term situations were less likely to be a problem. He chose this model because they were looking at a short time frame. The crystalline silica study looked more at the long term, and it was orders of magnitude away from the threshold.
- Dennis O’Mara asked about the cumulative effects of smaller amounts over time. Mike Williams said he could take the same model and ask for an annual average.

ACTION ITEM: Mike Williams will ask the model about the annual average.

- Stephen Littlejohn said that when he joined the group in 2006, he was introduced to the concept of continuous environmental improvement. Precisely because of all the uncertainties, the goal had to be reducing concentrations.
- Mr. Littlejohn encouraged the CEWG to continue to keep their eye on the mission and find ways for continuous environmental improvement—it was a good group mission. He said that they had several options now, which were to go systematically through Mr.

Williams' recommendation and decide which one to pursue. Another was to adopt a task force model with Mr. Williams as the champion to work the recommendations. The CEWG had two strong "goers" with the emergency response and spikes modeling. He reminded that the CEWG wanted to concentrate on specific action areas rather than a diffuse set of issues.

- Mr. Littlejohn thanked the group for the long-term relationship and giving him the opportunity to serve.

MEETING ADJOURNED

CONSENSUS DECISIONS

1. The CEWG January meeting date will move to January 22.

NEXT MEETING

January 22, 2013, 5 to 7 p.m., Corrales Senior Center