

FINAL MEETING SUMMARY

Community Environmental Working Group

“Striving for Continuous Environmental Improvements at Intel”

Date: February 19, 2020
Time: 5:15–7:00 p.m.
Location: Corrales Senior Center

Members Attending

John Bartlit, NM Citizens for Clean Air & Water
 Mike Williams, NM Citizens for Clean Air & Water
 Dennis O’Mara, Corrales resident, Corrales Residents for Clean Air and Water

Hugh Church, American Lung Association in New Mexico
 Sarah Chavez, Intel

Non-Members Attending

Alexander Lowry, Intel
 Erika Edgerly, Intel, Corrales resident
 Dr. Chuck Wiggins, University of New Mexico

Caroline O’Mara, Corrales resident
 Dr. Louis Scuderi, University of New Mexico
 Srikanth Padalugu, NM Dept of Health

Jessie Lawrence, Facilitator

CJ Ondek, Recorder

HANDOUTS

- CEWG Draft Agenda
- December Draft Meeting Summary
- November/February EHS Activity Report
- Action-Item Progress Report

PROPOSED AGENDA

- Welcome, Introductions, and Brief Items
- Standing Agenda Items
- UNM Cancer Study
- Adjourn

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 Prepared for: CEWG
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WELCOME, INTRODUCTIONS, ANNOUNCEMENTS, BRIEF ITEMS

John Bartlit opened the bi-monthly meeting by stating the CEWG mission, which was to make environmental improvements at Intel, reduce chemical emissions at Intel, and improve community dialogue. Introductions were made.

Agenda—Revisions and Approval

No comments.

Meeting Summary—Revisions and Approval

No comments.

Other Announcements

Sarah Chavez said that tonight was her last meeting with the CEWG, and that Alex Lowry would be replacing her as Intel's representative on the CEWG.

Public Comment

None.

STANDING AGENDA ITEMS**EHS Report**

Alex Lowry reported on two EHS reports, from November to February. He reported that in November and December there was crane work happening on Intel's property. In terms of regulatory submittals, the semi-annual wastewater report was due.

In January and February, Alex Lowry said crane work continued and many regulatory submissions happened around this time. Some happening now were the annual report for stormwater discharges; the semi-annual air emissions report; the semi-annual wastewater report; and the diesel fuel report. Erika Edgerly said that drainage and trail improvements were happening on Intel's east slope, and portions of the trail were closed for safety reasons. Signage was posted to notify neighbors and provide updates. She expected the Corrales trail section to be closed until the end of March or early April. A section south of that would be closed until end of March or early April, also.

LEPC Update

Dennis O'Mara said the Sandoval County Emergency Planning Committee met on February 5, and he updated on several agenda items. The LEPC was anticipating receiving a grant to redo the all hazards emergency operations plan, but snafus occurred that delayed the award. The committee was trying to remedy the situation and resubmit. They were hoping to get the funding soon. They also discussed finalizing the community preparedness guide, which had been posted on the Web site for the last year or so in draft form. They were working to schedule a meeting to

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approve a final version; they hoped to print and distribute the final version in the future. They also edited the list of people receiving invitations to attend LEPC meetings. Lastly, Mr. O'Mara said they agreed to schedule their quarterly meetings every second Wednesday on the of the months of January, April, July and October.

Satellite Image Mapping of Vegetation Change Study

Dr. Louis Scuderi gave an update on his satellite image mapping study. He said he had downloaded 1.4 terabytes of data from 1972 that looked at vegetation. He said he would like to provide a small presentation at the next CEWG meeting.

NM CANCER CONCERNS WORK GROUP ASSESSMENT

Jessie Lawrence explained the process to discuss the Cancer Concerns Work Group report. After short presentations by UNM's Dr. Chuck Wiggins and NMED's Srikanth Padalugu, CEWG members would be able to ask their high priority questions. The point was to make sure all CEWG members had an opportunity to ask at least one question.

- Srikanth Padalugu, New Mexico Environmental Health Epidemiology's Bureau Chief, introduced himself and gave a brief background on his organization's role in the report. He said the report was developed by the Cancer Concerns Work Group, but approved by the State's epidemiologist Dr. Mike Landon, which was standard process. They also had a standard approach to dealing with any Cancer Concerns Work Group inquiries, as well as a report template that they followed to report to the community requesting an analysis. The standard approach was to provide expected ratios of cancer appearing in a specific communities compared to the rest of the state. Also, New Mexico's unique demographic and ethnic composition made it difficult to compare New Mexico cancer rates with national rates, since cancer was closely tied to ethnicity. He wanted to make it clear that the Cancer Concerns Work Group did not have the capacity to determine causality in any of their studies.
- Dennis O'Mara said that at the last meeting Dr. Chuck Wiggins had used the term "Environmental Department," to describe the Environmental Epidemiology unit of the State Health Department. Mr. O'Mara and others had incorrectly interpreted that to mean the New Mexico Environmental Department (NMED). Dr. Wiggins clarified that NMED was not involved in the study or the preparation of the report. This was a relief for many community members who had come to mistrust NMED over the years, Mr. O'Mara said.
- Dennis O'Mara said that although cancer rates in general were lower in New Mexico than at that national level, this trend did not apply to every cancer and particularly to myeloid/monocytic leukemia and non-Hodgkin's lymphoma. Lastly, he acknowledged

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while the state follows a similar process and template in these kinds of investigations, he emphasized that “one size did not always fit all.”

- Dennis O’Mara said he recently sat down for four hours with Dr. Wiggins to discuss all his concerns raised by the report. Dr. Wiggins said he recognized Mr. O’Mara’s concerns and met with him to demonstrate transparency and in the hopes of establishing trust through dialogue to address all his questions. His major hope was that he would be seen as a trustworthy source of data. He also hoped, through dialogue, to address any remaining questions tonight.
- John Bartlit said there were two sides to the template issue. On one hand using the same analysis method allowed for direct comparison of different NM situations; the disadvantage was that one size did not fit all.
- Dr. Wiggins presented the slide *Cancer incidence rates by race/ethnicity among women in NM* (per 100,000) to show how cancer rates varied by ethnicity. The slide captured rates for Caucasian, Hispanic and American Indian women, which made up about 97% of New Mexico’s population. Other ethnic groups were too small a percentage of population to capture the data. Although breast cancer was the most common cancer for women across all ethnic groups, American Indian women had about half the breast cancer incidence rate as Caucasian women. For some of the rarer cancers, American Indian and Hispanic women had higher rates than Caucasian women. His point was that incidence rates and distribution were inconsistent across the different cancers. He then showed the slide with Figure 1, *Observed-to-Expected Ratios and Corresponding Confidence Intervals* to show that the bar for breast cancer was almost perfectly centered on the null value 1 vertical line. In comparison, Dr. Wiggins observed that Figure 1 showed the myeloid/monocytic leukemia bar line skewered to the right of the null value vertical line and did not cross or touch it. He said the study found 61 cases of myeloid/monocytic leukemia, which was a 40% increase over the expected number of cases (43.49).
- Chuck Wiggins said one of the questions he and Dennis O’Mara discussed was the notion of observed-to-expected methodology versus incidence rates. In a community setting he believed it was easier to talk about how many cases they saw and how many cases they expected to see, which was the observed-to-expected method. Dennis O’Mara said he disagreed, and that it was easier for people to understand incidence rates. Dr. Wiggins said that they could agree to disagree on this point.
- Chuck Wiggins said he calculated the incidence rate for myeloid/monocytic leukemia in response to Mr. O’Mara preference. He showed a slide that looked at incidence rates per 100,000 across the 14 Census tracts (7.6), statewide (5.3), and nationwide (6.3). As a way to discuss the different rates, they looked at rate ratios. The 14 Census tracts compared to

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statewide got a ratio of 1.4. The 14 Census tracts compared to nationwide got a ratio of 1.2. He showed in a different slide that he had calculated the observed-to-expected ratio of 1.4 using the observed number of cases (61) and the expected number of cases (43.49). The observed-to-expected ratio of 1.4 was the same as the 1.4 ratio rate he derived looking at incidence rates. He concluded that the two methods yielded equivalent results.

- Chuck Wiggins said he was asked why they did not use national rates as the comparison in the study. Using the national rates diminished the difference, because national rates were so different than in New Mexico. Working in New Mexico required calculating using race and ethnicity. The ratio he got for nationwide was 1.2, which was smaller than the statewide rate of 1.4, thereby diminishing the outcome.
- Dennis O'Mara said he had calculated different numbers. His numbers were based on age-adjusted rates and not ethnic/racial rates. His calculations showed an 8.3 rate per 100,000 in the 14 Census tracts, which was higher than Dr. Wiggins calculation of 7.6, and the nationwide rate was 4 per 100,00, indicating that the rate for the 14 Census tracts was twice the nationwide rate. He also calculated the statewide rate of 3.7 to 3.9 per 100,000.
- Chuck Wiggins said different websites—the CDC, the National Cancer Institute, etc.—all showed different national rates. He calculated his rates by hand for the study area, and he would love to see Mr. O'Mara's methodology of calculating the rates. Most likely using data from different sources in the calculations would yield different rates. His rate was based on the data used in the report. Bringing in other data to use in calculations was problematic. Dennis O'Mara said 7.6 vs. 8.3 was not that far off but the others were quite different. He looked at SEER, CDC, and National Cancer Institute to find numbers for his calculations.
- Louis Scuderi commented that looking at rates was going down the wrong track, and what was really important was the statistical significance differences between populations. Chuck Wiggins looked at the confidence intervals for myeloid/monocytic leukemia, which was 1.07 (lower) and 1.8 (upper) indicating a statistically significant observation. He said this was clearly stated in the report. Dr. Wiggins said in his opinion statistics were a tool, and users had to use judgment and experience to read and interpret the statistics.
- John Bartlit said that they knew data showing the incidence of a disease could be less reliable when the population size was small. Having more and more cases overcame the obstacle of smaller populations and showed higher incidence. Were there cases in New Mexico and in the US that data from small populations clearly showed high incidence rates?

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- Chuck Wiggins discussed the Hill Criteria, which identified the association between smoking and lung cancer. The association was overwhelmingly strong. But also important was consistency—that the high numbers were seen constantly and not just once or twice. He said that wherever he went in the country and saw many people smoking, he also saw high rates of lung cancer. In New Mexico, most smokers were in the Southeastern and Northwestern corners. Lots of oil workers were in these areas, and oil workers really liked to smoke. These areas had the highest lung cancer rates.
- In another example, Dr. Wiggins said an article was published in 1990 or 1992 in the New England Journal of Medicine about a small American Indian community in New Mexico that had way too many mesothelioma cases—20 to 30 times higher. The one thing they knew that caused mesothelioma was asbestos. How high was high, he asked? In the big picture, many epidemiologists would not look at any ratios lower than 2 or 3. He said he did not think this was always appropriate.
- Mike Williams asked Chuck Wiggins about standard deviation. Chuck Wiggins said he used data from the 14 Census tracts and to calculate confidence intervals he used an algorithm from the Washington State Health Department that he downloaded from the Web. In this case the sample size was drawn from was 61 cases in numerator, and the denominator was the statewide rate.
- Chuck Wiggins referenced the slide entitled, “Overview of Calculations Leading to the Observed-to-expected Ratio.” The slide showed age, statewide incidence rate for each age group, population size of interest, and number of years in study period. To get to the expected number of cases, he multiplied the rate by the population, and did this for each of the 14 Census tracts, ancestries, and cancers. The bottom of the slide had the following equation:

$$\text{Total OBSERVED} / \text{Total EXPECTED} = \text{Observed-to-Expected (O/E) Ratio.}$$
- Srikanth Padalugu said to let him know if anyone needed more details about how the study was done, and he would have someone in his office reach out to provide more information. Chuck Wiggins said he was happy to share the details behind his methodology with anyone, and if anyone found a better method then he would like to know. Louis Scuderi said he would do the calculations the same and did not see a problem with Dr. Wiggins’ method. Dr. Wiggins said he would share the paper that he referenced for this method with anyone who wanted it.
- John Bartlit asked Dennis O’Mara about the feedback he had received from consulting with various experts, and if he would share that feedback. Mr. O’Mara said he had

assured those individuals that their identities would remain confidential. He used some of their feedback to form his questions and critique of the Cancer Concerns study.

- Chuck Wiggins said the point of looking at other methods was to get to the best answer possible. He said what bothered him was that some of Mr. O'Mara's questions were phrased in a way to cast doubt on his abilities and his truthfulness. Dr. Wiggins said he was happy to have his abilities questioned but not happy to have his truthfulness questioned. He said he was forthcoming with both Mr. O'Mara and the CEWG, so if his abilities were lacking—"and they could be"—he would love to see the critiques and talk to others about it, because he could learn from it. John Bartlit asked Mr. O'Mara if some of his contacts might be willing to speak with Dr. Wiggins about their feedback. Mr. O'Mara said he could inquire.
- Dennis O'Mara responded that he trusted Dr. Wiggins implicitly, and his critique was based on mistrust in the broader sense. For example, this report was written anonymously, but there appeared to be multiple contributors that he believed should be named. That there was no authorship in the report was one of a dozen concerns that he had "couched in a cloud of mistrust." He only learned fairly recently that Dr. Wiggins was the primary (but not only) author. He said that Dr. Wiggins seemed to agree on where Mr. O'Mara was coming from. For example, some of the extraneous commentary on smoking or prostate testing seemed like an attempt to misdirect readers away from actual findings of higher than expected rates. He said that he heard that those comments were not put into the report with that purpose. Nevertheless, he was asking for an understanding of why residents had misgiving about NMED and the State of New Mexico's environmental agencies.
- Dennis O'Mara said he was not questioning Dr. Wiggins' abilities or his veracity. Mr. O'Mara emphasized that Dr. Wiggins was "a scholar and a gentleman" and didn't want anyone to think that he was suggesting that Dr. Wiggins was trying to "put one over on me." Mr. O'Mara said at times like this he could be very direct, but if he was wrong then he wanted to know where he was wrong; this was his approach.
- Dennis O'Mara said he did not have access to the raw data and did not know how the calculations were done in the study, so he had to dig around himself to find data to use to check the findings. The only thing he had to go on was incidence rates. He said he did not take back his concern about extraneous material and still believed it should be written out since it wasn't helpful. He was also concerned about the "all cancers" data and commentary; it was unfair to add in every cancer rather than just include the 12 cancers in the report, he said. He was anxious to hear what Dr. Wiggins had to say about going forward in a slightly different way.

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- John Bartlit asked if Chuck Wiggins was willing to talk to Dennis O'Mara's contacts. Dr. Wiggins said he was. Mr. Bartlit said they could have a phone call at a CEWG meeting, and they would all benefit from listening to the phone conversation. He proposed that Mr. O'Mara check with his contacts about their willingness to participate. He suggested even having multiple callers, if possible. Mr. O'Mara said he would check. Dr. Wiggins emphasized that he was not a statistician and would be lost in detailed conversations about statistics, so it might be better to summarize the person's critiques in advance.

ACTION ITEM: Dennis O'Mara will communicate with his contacts to see if they might be willing to participate in a conversation with Dr. Wiggins about their feedback on the Cancer Concerns study, either in a one-to-one phone call or in front of a larger audience.

- Louis Scuderi said he had no problem with Dr. Wiggins' use of statistics in the report, and he worked with statistics all the time. He said the real issue was around spatial distribution. If clusters were looked at and included, that 1.4 number might be quite a bit higher. So without including spatial distribution, it was not valid to the question being asked—was there a point source that was actually producing negative, false results. Dr. Wiggins said he would agree with Dr. Scuderi's broader analysis. However, the report was not meant to answer all questions; it was meant to be a first survey and met the goal of giving an honest first view.
- Chuck Wiggins suggested possible steps forward of looking at spatial distribution or adding more Census tracts. That would be out of the purview of the Cancer Concerns Group, but maybe some academics might want to get involved, he said.
- John Bartlit said the book *Boiling Frogs* documented the history of meetings that occurred and what people said at those meetings, and for that it was useful. He suggested Dr. Wiggins read it to get an understanding of the community's perspective.
- Chuck Wiggins said in the process of doing this report, one of the things he would do differently was to call Intel and invite them to the table. He said that he was not being completely transparent by not involving Intel. Second, he would develop a committee to touch base with along the study process to discuss methodology on how statistics were calculated. Some of the issues they were having now might have been worked out. He said that the Working Group had some robust discussions about the methods used in the report, and they were anxious to hear about the CEWG meeting discussions.
- Chuck Wiggins said he learned a lot of lessons from attending CEWG meetings. The report was not perfect, and he didn't agree with all critiques. He could spend another six

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or eight months revising the report, but the observed-to-expected ratio was not going to change whether incident rates were used. He said he was confident that he would be showing the same statistics and results. He suggested having conversations around taking the signals in the report and moving forward on those, such as drilling down on leukemia and non-Hodgkin's lymphoma. However, it might not be in the Cancer Concerns Group purview. What the Group didn't know was what to do next when they had findings. Srikanth Padalugu said that finding relationships or establishing causality that would fall out of the scope of the de Cancer Concerns Group. This kind of study would need more time, manpower, more financial resources than they had. John Bartlit said there was lots of competition for limited resources. On the other hand, tonight showed they were drilling down in a different way and might learn things through this unique dynamic that could be applicable elsewhere. The CEWG was a unique resource for the State, he said. Dr. Wiggins agreed that he learned a lot that he would use again in the future.

- Dennis O'Mara said there was an interim step. He was interested in non-Hodgkin's lymphoma and the two leukemias because of a paper Marcy Brandenburg found about Korean microprocessor production workers at Samsung. He suggested recalculating the numbers based on an additional six years of data to see if the results were affected. He also suggested keeping an eye on it in the future. Dr. Wiggins said that was an occupational report so it was a bit different. The key was whether they found more cancer than they expected. Mr. O'Mara said what caught the attention of Korean investigators was cases occurring in younger people at higher rates. One of the generally accepted risk factors for all three was age. Mr. O'Mara said he had not found additional studies but news reports about Samsung denying a connection and then changing their tune and accepting responsibility and providing assistance to the people who developed these cancers and their families. He said the original Korean study report revealed that Samsung had not cooperated with the investigation.
- Chuck Wiggins said that possible next steps were to add six years of data to the study or come back in a year or two to do a broader report. He would need to discuss these possible steps with the Cancer Concerns Group to see if resources were available to do this.
- Dennis O'Mara suggested eliminating all the other nine cancers from further review, including prostate cancer, and looking more closely at non-Hodgkin's lymphoma and the two leukemias by gender and age group, although said he hated to see the report stand in its present version due to some of the wording in it that he continued to believe was misleading.
- Chuck Wiggins said he and Mr. O'Mara disagreed on this point, and he wanted to amplify that it was not their intention to divert people away from the findings but to

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provide context. He had no idea that what he wrote could be misconstrued or interpreted in the way that Mr. O'Mara interpreted. However, he learned from the experience and would question whether or not it was appropriate to add specific context in future community studies.

- Jessie Lawrence summarized that Chuck Wiggins would check in with Cancer Concerns Group and communicate through Ms. Lawrence any developments.
- Carolyn O'Mara asked how rare cancers would be calculated. Dr. Wiggins said the study was designed to look at a list of 12 cancers, so they were not looking for rare cancers per se. He recalled that Dennis O'Mara and Marcy Brandenburg had given him a list of the 12 cancers to look at. Dennis O'Mara recalled coming up with the list together with Dr. Wiggins, because they had talked about which cancers might be occurring as a result of exposure to toxins. Dr. Wiggins said he was certain there was a list but now could not be sure. So in answer to Ms. O'Mara's question, he would have to sit down and think about it. He might do a similar analysis for rare cancers but had never done anything like it before.
- John Bartlit asked about the 2019 annual report. Jessie Lawrence said she would follow up Mr. Bartlit and Alex Lowry about the draft Annual Report and it would be discussed further at the April meeting.

ADJOURN

NEXT MEETING: April 15, 2020, 5:15 pm to 7:00 pm, Corrales Senior Center.