Community Environmental Working Group
c/o Stephen Littlejohn, Facilitator
504 Luna Blvd. NW
Albuquerque, NM 87102
March 30, 2009

Records Center, ATSDR
Attn: Intel-New Mexico Site
1600 Clifton Raod, NE MS F-09
Atlanta, GA 30333

Dear Colleagues:

The Community Environmental Working Group (CEWG) is pleased to submit the attached comments about the ATSDR's Health Consultation Report reviewing air quality data for Intel New Mexico dated February 2, 2009 (public comment release).

Our comments were drafted by CEWG member Mike Williams, Ph.D., Engineering. The draft was discussed at length and refined at our regular public meeting of March 18. Group members present—John Bartlit, Mike Williams, Hugh Church, Carrie Freeman, Edward Pineda, and Sarah Chavez--adopted these comments by consensus. Although they supported the group's consensus, the Intel representatives to the CEWG wish to acknowledge that Intel will submit its own comments, which may or may not be consistent with those of the CEWG as a whole. Intel comments may be substantively different from those of the CEWG on certain points, may include differences in emphasis, or may include additional information not available to the CEWG at the time of its meeting on March 18. Further CEWG comments may develop in the April meeting based on information not available for discussion at the March meeting.

We appreciate the opportunity to comment and extend our appreciation for your efforts in this case.

Sincerely,

John Bartlit, Acting Chair

Comments on the ATSDR's Health Consultation - Public Comment Release, Review of Air Quality Data – Intel Corporation, New Mexico Facility

From the Community Environmental Working Group (CEWG)

We have examined the Public Comment Release and we want to congratulate the agency on its work and thank its people for their conclusions and recommendations. We feel that the release is a useful discussion of the relevant data and we think its conclusions are well-founded. We believe the conclusion that we should all look for ways to reduce emissions and ground-level concentrations from the facility is an important one and we also support the recommendations for targeted ambient monitoring. We believe that the conclusion that the available data are not adequate to show conclusively that emissions are safe or that they are unsafe is accurate. The logical response to this conclusion is to make the emissions safer by reducing them and to gather appropriate data to make stronger conclusions possible.

We do think that there are some things that could have been improved upon in the consultation. First, the potential risks of fine-particle emissions are discussed only in the context of crystalline silica, while fine-particle concentrations are a health concern with or without the presence of crystalline silica. The modeled (Attachment K, Intel Rio Rancho Facility, RTO Relocation, Technical Permit Revision, Air Dispersion Modeling, Class One Technical Services, November 2007) fine-particle concentrations are close to the standard set to protect human health. Furthermore, the World Health Organization (WHO) advocates a more restrictive adverse health level than our standards set by the EPA, even though both the WHO and the EPA relied upon the same data.
The data included several levels of fine-particle concentrations and impaired health in US cities. There is a simple explanation for the discrepancy between the two adverse levels, the studies showed that increasing fine-particle concentrations produced health effects throughout the levels found in the study areas. EPA chose to pick a level next to the lowest concentrations as a standard where they could show a health deterioration between that level and the lowest level, while WHO chose to pick the lowest level studied since no safe level had been found.

There are reasons to believe that some of the assumptions in the fine-particle modeling were unduly conservative, so that actual, as opposed to modeled, concentrations may be somewhat less. Furthermore, Intel and CEWG have worked to make modifications (the removal of rain caps on boiler stacks, which raises effective plume height) that further reduce ground-level concentrations. The CEWG also recommended that the stack heights of the new thermal oxidizers be increased from the initial design level of 23 meters to 38-40 meters, however Intel chose a level of 30 meters. The initial fine particle modeling used the design value of 23 meters, so that some additional reduction in the modeled, fine particle concentrations has been realized. It is also worth noting that the modeled fine-particle concentrations included significant contributions from sources other than Intel facility emissions.

We were a little disappointed that more use of modeling results was not made. It has been our experience that the best understanding of air quality issues is made when emissions (estimated or measured), models, and measurements are considered together. Models can help put limited measurements in context and they can be used to assess the significance of emission information. For example, we applaud the agencies description of the high and uncertain thresholds in the FTIR detection. However there is no discussion about the fact that the FTIR measurements are path measurements rather than point measurements. Modeling can be used to assess how much higher concentrations might be expected at individual points than the average over the path length.

Modeling can also be used to put the measured concentrations in context. It can be used to estimate how representative a few measurements over a limited time might be of concentrations that occur over a large area and over long times. We have also attached one page taken from the Intel risk assessment that show all the receptors used in the modeling and the locations of the FTIR sampling paths. We also note that the paths are significantly longer than the separation between receptor locations (50 meters), so that significantly smearing of plumes during short-term events would be expected.

We believe that the discussion of the formation of crystalline silica is a little misleading. The literature does note that crystalline silica forms above 800 degrees Celsius, but the literature also suggests crystalline silica begins to form at lower temperatures (750 degrees Celsius, which corresponds to the Durr's RTO operating temperature of 1360 degrees F and even more closely to the Munter's RTO operating temperature of 1385, which started operating during January 2009), so that some formation might be expected at temperatures near those in the Intel facility. Specifically, the following statement, "Combustion of rice husks, typically stoker fired boilers, where the ash experiences sustained temperature above 750ºC leads to a significant quantity of crystalline silica in the residual ash," appears in the report Rabovsky, J., "Estimated health risk associated with the exposure to Silica from Wadham Energy Co, Williams, CA": final report California Environmental Protection Agency, Office of Environment Health Hazard Assessment, 1992 page 44. It is also important to note that even a very small conversion on the order of 1% would be sufficient to produce more of a hazard associated with crystalline silica than associated with amorphous silica.

We concur with the discussion on page 31 that the winds measured at the FTIR site might not agree with those at the Intel weather tower site, because of monitoring height differences and the effects of flow around obstacles including buildings.

We found the tables of concentrations measured by the Intel FTIR interesting. However, we found the entry for Maximum 1 hr/ 24 hr concentrations for nitrogen dioxide on page 28 incomprehensible. Clearly, the maximum 1 hr can't be five times lower than the maximum 24 hour average. Is there a leading digit missing in the 1 hr average? There are several cases where the mean over all measurements above threshold is significantly above the maximum 1 hr value (for example for phosphine the mean of the detected values is 12 while the maximum 1 hr value is .4593 ug/m3). Are we to interpret this to mean that there was a very short time value of 12 or greater with the remainder of the

hour being below detection so that the measured value plus the zeros for the remainder of the hour gave an average of .4593 for the entire hour? If so, this certainly underscores the reports conclusions about the poor detection thresholds.

The table does suggest some areas worthy of further investigation. Benzene concentrations seem to be well-above the ATSDR MRL-A level, but we are not aware of benzene emissions from the Intel facility, do you have any information to suggest that these values are related to Intel or are these to be interpreted as probably produced by other sources? The aldehydes appear to be above odor threshold levels but these might be expected to be mostly associated with other urban emissions or they may be photochemically produced from hydrocarbons emitted by Intel or other sources. It would useful to assess Intel's role in the measured levels.

The Nitric acid 1 hour concentrations appear to be above the CA Acute Rel; could you describe the averaging time on which the CA Acute Rel is based? The average of detected values for Hydrogen Fluoride is above the ATSDR MRL-A level and is also above the odor threshold of 33ug/m3. The 1 hour average is not above the ATSDR MRL-A level of 16.7 ug/m3, however the average detected value of 46 ug/m3 is similar to the risk assessment's modeled, maximum 1 hr average of 46 ppb or 41 ug/m3. Since the odor threshold is 33 ug/m3, the measurements also suggest that HF odors would be expected. Since the FTIR measurements represent path length averages, higher concentrations must have occurred at points within the path.

Bromoform appears to illustrate the concerns about the inadequate thresholds. The average value of the detections was 392 micrograms per cubic meter while the EPA region 3 Risk based concentration value is 1.6 micrograms per cubic meter. However if the non-detects are taken as zeros and averaged in with the detected values, the resulting average is 0.294 micrograms per cubic meter. Consequently we can say that over the few points measured with the FTIR we could have averages that are somewhere between one-sixth of the concern level to 200 times the concern level. Note that I am assuming that the RBC is a long-term average, if it is appropriate to a shorter term average, both the 24 hour and the 1 hour average are well above the concern value.

The phosgene values are of interest, because they are close to the CA Acute REL. We know that NMED concluded that their measurements for phosgene were false positives, but the table reports Intel's values which apparently used a different analysis technique. At the ATSDR public meetings held in February in Rio Rancho, public interest and concern were shown regarding levels of phosgene in the local ambient air. Further information of interest is what, if any, data are available regarding phosgene in ambient air near other Intel plants, near other computer chip plants, and/or in other locations, including typical urban areas. Such data would assist in understanding the local situation.

At this time it seems that: (1) we don't have long-term precise measurements sufficient to characterize the air quality levels of concern, and (2) what measurements we have are confined to a few locations and for a small fraction of a year (10 weeks). The modeling that has been performed is based on a single year's meteorology. The data we do have

suggests that Nitric Acid levels are of concern and that Hydrogen Fluoride levels present odor concerns. There are also relatively high levels of benzene and various aldehydes which might involve some contributions from Intel sources.

In order to fully understand the potential for health effects from Intel emissions we need to have a more complete picture of the concentrations of various contaminants that occur in the vicinity of the Intel plant. Ideally we would like to have sufficient measurements that the time-concentration profiles of species such as fine-particles, Hydrogen Fluoride, Bromoform, and Nitric Acid could be well described. We would also like to have a source-apportionment for aldehydes and benzene so that we could separate out any Intel contribution from other sources in the urban area. In the context of source-apportionment it would be helpful to have precise measurements at many locations over a year or more of the pollutants of concern in addition to potential Intel tracers such as Hydrogen Fluoride, PGME (Propylene Glycol Monomethyl Ether Acetate, Carbon Tetrafluoride and Isopropyl Alcohol. We would appreciate suggestions on measurement techniques and other chemical species of interest. We would like to encourage the relevant studies and would appreciate any suggestions for study design or funding support that you could make. We would like to know what studies in the vicinities of other chip manufacturing plants have shown.

We will also continue to strive for measures that reduce emissions or ground-level concentrations associated with the Intel plant. We welcome any suggestions that you might have to help us in that regard.

While we have noted some areas that we think could be improved, we want to stress that we think the conclusions and recommendations are sound. We think correcting some of the deficiencies that we have described would further strengthen the report.