



Position Statement on the May 2024 Cancer Assessment of 14 Census Tracts in Bernalillo and Sandoval Counties

In late 2019, two members of Corrales Residents for Clean Air and Water (CRAAW) requested that the New Mexico Tumor Registry repeat a study of selected cancers in the 14 census tracts surrounding Intel New Mexico. For multiple reasons, the original study, proposed by these same individuals in December 2015 and published in October 2019, proved unsatisfactory. In January 2020, the Tumor Registry Director agreed to repeat the study, modifying the methodology and addressing multiple concerns expressed by the requestors. The new study, was published on May 24, 2024.

Each study was undertaken by the New Mexico Tumor Registry led by Dr. Charles Wiggins, PhD. Both study reports are products of the New Mexico Cancer Concerns Work Group which includes members from both the New Mexico Department of Health and the New Mexico Tumor Registry. In the intervening four-plus years since January 2020, CRAAW transitioned to become Clean Air for All Now! (CAFA-now!).

CAFA-now! disagrees with the conclusion of the Cancer Concerns Work Group that

the issue of cancer rates in the study area does not warrant further assessment for a number of reasons.

- CAFA-now! has compiled a list of over 100 chemicals that Intel uses or has used. Most of them are dangerous and many are carcinogenic.
 - The list includes a number of PFAS, Per- and Poly-fluoroalkylal Substances, so-called forever chemicals that cause various cancers and a host of other human illnesses.
 - Intel claims that some of the chemicals it uses are proprietary and therefore cannot be known by the general public. Thus, the risk of Intel's emissions to residents living near the plant is likely even greater than what is currently understood.
 - Intel is about to complete a major expansion that will result in an increase in the quantities of toxic air emissions it releases.
 - The rates of seven cancers in the new study area are higher than in the rest of the state, and three of those are statistically significantly higher.
 - The All-Cancers-Combined rate in the study area is also statistically significantly higher than the rest of the state.
-

■ CAFA-now! hypothesizes that the **probability of three cancers occurring in the same area at rates elevated significantly beyond expected rates is highly unlikely**. The likelihood is statistically defined by the joint probability equation for independent events. Joint probability is the likelihood of two or more independent events occurring together. The joint probability of three such events occurring is the product of the individual probabilities of all three independent events.

As an example, using gambling dice, the probability of rolling a six with one die is $1/6$. Rolling a second independent die and also rolling a six is also $1/6$. Their joint probability of both being sixes is $1/6 \times 1/6 = 1/36$ (rare but does happen from time to time). A roll of a third independent die resulting in a 6 also has an independent probability of $1/6$. But the probability of rolling three sixes with three independent dies (or rolling three sixes in a row) is $(1/6) \times (1/6) \times (1/6) = (1/216)$. Or in other words one out of every 216 rolls of the three dice will result in three sixes (or one such occurrence in 216 rolls).

Regarding the cancer study results, we assume that one of the significant cancers occurring randomly at the reported 95% confidence interval (the standard for statistical significance) is $5/100 = 1/20$ (one chance in 20). The joint probability of three such events (cancers significantly above background) is $(1/20) \times (1/20) \times (1/20) \approx (1/8,000)$ (one such occurrence in 8,000 random independent events).

Returning to dice to illustrate the extremely low likelihood of these three cancer rates not being significant, if we roll a fourth independent die and get a fourth six, the

probability of this occurrence is $(1/6) \times (1/6) \times (1/6) \times (1/6) = (1/1,296)$. Still more likely than finding three significant cancers. Roll another die and get another six (now you have rolled five consecutive sixes) and the probability of this occurring randomly is $(1/6) \times (1/6) \times (1/6) \times (1/6) \times (1/6) = (1/7,776)$. This is still more probable than finding three significant cancers $(1/20) \times (1/20) \times (1/20) = (1/8,000)$. Finally, you roll a sixth die and get another six and finally exceed the likelihood that the three significant cancers in the cancer study occurred randomly.

We conclude that we have to accept the hypothesis that finding three significant cancers is highly unlikely to have occurred by chance. Any statement to the contrary is incorrect and misleading.

Therefore, CAFA-now! rejects the Cancer Concerns Work Group's conclusion that no further assessment of this situation is warranted. We call upon both the New Mexico Tumor Registry and the New Mexico Department of Health to engage in discussion with CAFA-now! to plan an appropriate process to continue monitoring for selected cancers among residents in the vicinity of the Intel Plant.