

Ag leader critical, air officials cautious, about UC study on valley air pollution

By Steven Mayer

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Roger Isom was not in a mood to be polite.

When the president and CEO of the Fresno-based Western Agricultural Processors Association read about a UC Davis study published last week that attributed a huge chunk of the air pollution in the San Joaquin Valley to emissions from fertilized farm fields, Isom was, at best, perplexed, and at worst, fighting mad.

And now he's pushing back.

The study, published Jan. 31 in the research journal *Science Advances*, says unused fertilizer in agricultural soils contributes as much as 41 percent of nitrogen oxide, or NO_x, the key air pollutant in the valley.

"There's been plenty of previous research done that puts it not at 40 percent, but at 4 percent," Isom said.

Indeed, Bart Croes, chief of research at the California Air Resources Board, or CARB, said a 2013 study — also connected to UC Davis — estimated 3.8 percent of the valley's NO_x is emitted by cropland. In fact, the new report recognizes that CARB officially uses the 3.8 percent estimate, but disagrees.

The report says residual nitrogen in fertilized soil is a largely overlooked source of NO_x, which is a precursor to ozone-based smog in the summer, and a major contributor to PM 2.5, the scourge of the valley during the winter months.

In the study, the authors compared computer models with estimates collected from scientific flights over the San Joaquin Valley. Both the model and flight data suggested that soils with heavy nitrogen fertilizer applications are the source of NO_x emissions.

But when nitrogen-based fertilizers are used efficiently — when crops absorb the nitrogen rather than leaving significant amounts in the soil — that soil does not become a source of NO_x in the air.

"We need to increase the food we're making," said the study's lead author Maya Almaraz. "We need to do it on the land we have. But we need to do it using improved techniques."

But Isom criticized the methodology of the study, saying the use of "modeling" and "air borne measurements," cannot be as accurate as direct measurements of emissions from the soil as was done in the earlier study using flux chambers.

Seyed Sadredin, who heads up the San Joaquin Valley Air Pollution Control District, said no single study is enough to bring about changes in air policy. The scientific method is about amassing a body of evidence, he said. Such studies must be reproduced independently before wholesale changes are enacted.

"At the air district, we always look for the best, most solid evidence on what is causing our air pollution," he said. "Other studies do not agree with this study."

Croes said measuring NO_x is not as simple as it may sound.

"It's pretty complex," he said. All sorts of factors can potentially affect the outcome, from humidity, how the field was irrigated, how precisely the fertilizer was applied, the crop type, time of year, and other factors.

"Our concern is this study's findings are much higher than the previous estimates."

Isom predicts CARB will continue to rely on the previous estimates in setting policy, at least for the time being.

Meanwhile farming groups, including the Kern County Farm Bureau, note that growers are always working to identify best practices to grow food and improve air quality. And making fertilizer applications more precise to the needs of the plant is a goal shared by many farmers.

"This study raises some initial questions that I believe our industry would be interested in reviewing in more detail to assess its impact to growers in Kern County," said Beatris Espericueta Sanders, executive director of the local farm bureau. "It's important to note that most of the steps the study suggests are already underway and we are always open to working with partners to make our industry more efficient."

Stockton air quality, early spring 'devil's mix' for breathing

By Max Resnik

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The San Joaquin Valley Air Pollution Control District dropped its health advisory because of poor air quality.

The advisory was initially issued Jan. 31 after weeks of hazy, polluted conditions from San Joaquin County to Kern County.

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The district urges caution for the young, old and those with respiratory diseases as the air quality remains at a moderate level.

"We're experiencing a lot of stagnant weather, and with that, you have a buildup of particulate matter pollution in the wintertime," San Joaquin Valley Air Pollution Control District spokesperson Anthony Presto said.

Presto said unseasonably warm temperatures in combination with the lack of rain and wind have contributed to the buildup of harmful particles.

"What we really need to clean up the air is windy conditions," he said. "A lot of people think that rain alone will clean up the valley's air, but we really need wind and rain to do a great job of it. Wind tends to be a little bit more important as it dissipates particulate matter pollution."

Presto said one-third of air pollution in the valley during the winter months is derived from the valley's residents, who use wood-burning fireplaces.

Those kinds of fireplaces, he said, are prohibited when the air quality worsens.

"Only those folks that have EPA-certified stoves or pellet stoves that have been registered with the valley air district are allowed to burn," Presto said.

Those suffering from respiratory diseases in the San Joaquin Valley face a double whammy right now. Not only is the air quality less than favorable, but the pre-emptive taste of spring has led plants to bloom early.

"Everything's pollinating really early now, and then you have poor air quality plus the increased early pollination, and it's a devil's mix out there of the two of them," said George Bensch, director of allergy at Allergy, Immunology and Asthma Medical Group in Stockton.

Bensch recommended that people suffering from diseases like asthma, COPD, emphysema and other respiratory illnesses get their errands done early in the day and stay indoors as the air quality worsens.

"These people will accumulate mucus that they can't possibly expel because the mucus gets thicker. And then they stand a good chance of getting secondary infections because the inflammation is there from the poor quality of air," he said.

Bensch said those who do stay inside should make sure their home is clean, including air filters, and windows stay closed so as not to invite more dust and pollen.

He added that allergy sufferers should clean out nasal passages with saline.

The San Joaquin Valley Air Pollution Control District expects weekend winds to clear the valley of the polluted air.