



DATE: February 5, 2015

TO: Alameda County Recycling Board

FROM: Gary Wolff, Executive Director

SUBJECT: Research on Degradation of Pharmaceuticals in Compost ("Will Bugs Eat Our Drugs?")

BACKGROUND

Alameda County has adopted first-in-the-nation legislation that requires pharmaceutical companies to develop and implement stewardship programs for unused pharmaceuticals. The County also accepts for disposal pharmaceuticals through the existing countywide household hazardous waste program funded by our agency. It is now possible for Alameda County residents to drop off unused pharmaceuticals at about 20 sites in the County. Once collected at a drop-off site, the pharmaceuticals are transported for high temperature (>1,200 F) incineration at an approved facility. This is currently the only USEPA approved method for destroying pharmaceuticals.

The citizens' initiative known as Measure D that was passed in 1990 in Alameda County (creating the Recycling Board and a funding stream to support local recycling programs) included a ban on waste incineration and a funding provision for "planning, research, and studies directed at furthering the purposes of this Act." Mr. Arthur Boone, one of the citizens who helped develop the Measure and a well-known and widely respected recycling advocate, previously requested that the Board fund a study of the potential for pharmaceutical destruction in compost piles.

A scope of work and budget for this type of study is attached. The work will be implemented by a highly qualified team of researchers affiliated with the Lawrence Berkeley National Laboratory. Dr. Gary Andersen, Senior Staff Scientist and Ecology Department Head, will be the Principal Investigator. The study will test the hypothesis that the accelerated levels of microbial metabolism that occur during the hottest phase of the thermophilic composting process will break down and ultimately consume all pharmaceutical compounds that are present. As a first step towards developing an alternative to incineration of pharmaceuticals, they propose to explore the destruction of pharmaceutical waste in compost piles by spiking the piles with various pharmaceutical blends and then monitoring the progress of compound destruction through advanced mass spectroscopy and other techniques. Dr. Andersen's team is already engaged in compost research at the proposed test facility in Nicassio; a facility that is registered as an experimental site with Marin County and the State Water Resources

Control Board. Andersen's team has working relationships with staff of these agencies, as well as with staff at CalRecycle and USEPA.

DISCUSSION

This project is for scientific research. Its results could show that controlled composting is capable of destroying a wide range of pharmaceutical compounds, or the opposite. Or the study could lead to ambiguous results that would necessitate further research. We explored the possibility of a larger study -- with less chance of ambiguous results -- funded in part by the San Francisco Department of the Environment (SFE), but despite initial interest they eventually declined on the grounds that they are not authorized to fund research. In contrast, such research is explicitly authorized in Measure D. Dr. Andersen tells us that there are other possible sources of funds for future studies, if the result of this study were promising but inconclusive. I concur, because the water and wastewater industries are struggling with the existence of 'emerging contaminants' in both water supplies and wastewater discharges. Research on emerging contaminants is growing, and has been well supported by government and charitable research foundations focused on water and wastewater. However, little research has been done on the potential for destruction of these compounds in high-temperature compost piles.

As reported to the Boards last month, our account balances (revenues already collected but not yet allocated for spending or designated in a reserve) are substantial. The estimated fiscal year-end grants to non-profits account balance is \$1,163,157, so the cost of \$50,000 for this study is affordable. Authorizing this spending will increase our current fiscal year core budget, but it is a one-time appropriation that will not affect our future core budgets.

RECOMMENDATION

Amend the Recycling Board Budget for FY14-15 to add \$50,000 to Project 2040, funded from the grants-to-nonprofits account balance, and authorize the Executive Director to enter into a grant agreement with the Lawrence Berkeley National Laboratory (or affiliated entity) to perform the research proposal attached, with minor adjustments if deemed necessary by the Executive Director.

Attached Research Proposal: "The Fate of Pharmaceutical Compounds in Thermophilic Compost"