

Use of Carbon Derived from Almond Shells to Filter Municipal Drinking Water Supplies

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PROJECT SUMMARY

Objectives:

- Ascertain the effectiveness of using activated carbon made from almond shells to remove various concentrations of Dibromochloropropane (DBCP), formerly a widely used soil fumigant, from municipal water systems.
- Compare the effectiveness of almond shell-based activated carbon with that of the currently used standard form of activated carbon in terms of their ability to meet both USEPA and local contamination-reduction requirements.

Background:

Although 34 years have passed since DBCP was last used in California to control nematodes in such crops as citrus, almonds, grapes, and peaches, the compound persists at high levels in San Joaquin Valley groundwater. Consequently, local municipalities are required to use carbon-based filtration to treat water intended for human consumption. Activated carbon filtration is big business. In the City of Fresno alone, 30+ activated carbon filtration sites account for nearly 700,000 pounds of activated carbon utilization.

This new project represents a pilot study follow-up to the project cooperator's laboratory study, which showed that activated carbon can be made from either hard or soft-shelled almonds, and that such carbons are as strong as those made from bituminous coal. 'Varietal' activated carbons made from either 'Nonpareil' or 'Padre' shells removed DBCP equally well from contaminated water, and equally better than Calgon F-300 coal-based carbon.

This pilot study is being undertaken in cooperation with, and at the facilities of, the Fresno Department of Public Utilities' Water Division. An almond shell-based activated carbon column filter with a particle size distribution matching industry standard F-300 is being prepared for installation on a DBCP-tainted well. When installed beside a similar filter of F-300, the comparison will demonstrate the effectiveness and longevity of almond shell-based activated carbons compared to the industry standard F-300. If it produces results comparable to those of the initial lab study, it could well lead to both environmental improvement for the valley and an additional revenue source for almond shellers.

Project Cooperators: K. Thomas Klasson, USDA/ARS, New Orleans; Bob Little, Fresno Department of Public Utilities, Water Division

For More Details, Visit

- Project Progress Report on 2010 – 2011 Annual CD (10-WATER5-Ledbetter); or on the web (after January 2012) at AlmondBoard.com/ResearchReports