

Science TO RESULTS

Using science to create a healthier environment



DISCOVERY OF HIGH LEVELS OF TOXIC METALS IN Ayurvedic Medicines

U.S. EPA | SCIENCE AT THE EPA NEW ENGLAND REGIONAL OFFICE

SCIENCE lies at the heart of the mission of the U.S. Environmental Protection Agency (EPA). The Agency must rely on cutting edge research, accurate measurements and effective technology to implement its programs to protect the environment and human health. Without sound science and credible data, EPA can not wisely set environmental and health standards, clean up contaminated sites, measure ambient air and water quality conditions, or identify the new technologies or practices that will reduce releases to the environment. These fact sheets share with you some of our EPA New England's laboratory capabilities and exemplify some of the very best science we do to meet our agency mission.

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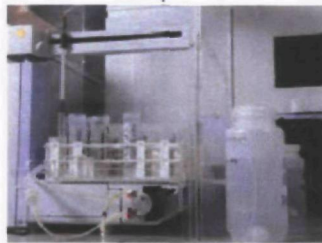
Ayurveda is a 2,000-year old system of medicine practiced by hundreds of millions of people in India and in the Indian community worldwide. In recent years, Ayurvedic herbal medicine products have become increasingly popular in the United States. However, questions have been raised about the safety of these products. There have been over 50 scattered reports in the medical literature of individuals who had taken these products developing lead, mercury or arsenic toxicity. For example, lead toxicity associated with these products has led to fatal infant encephalopathy, congenital paralysis, deafness and developmental delays. In collaboration with Boston academic researchers, the EPA New England Regional Laboratory has undertaken studies to determine whether Ayurvedic products contain harmful metals.

THE SCIENCE:

In 2004, a group of Boston researchers, including a chemist at EPA's regional laboratory, authored and published a groundbreaking paper in the Journal of the American Medical Association (JAMA) on metals content in Ayurvedic medicines. The study concluded that one in five Ayurvedic herbal medicine products produced in South Asia and available in Boston's South Asian grocery stores contained potentially harmful levels of mercury, lead and/or arsenic. The metal content in the seventy herbal medicines purchased at Boston stores were analyzed by the regional laboratory.

For a follow-up study published in JAMA in 2008, the researchers again asked the regional laboratory to participate in an analysis of the metals content in herbal medicine products sold over the Internet. The study found that 20.7 percent of the

Ayurvedic medicines contained lead, arsenic, and/or mercury at levels exceeding one or more standards for acceptable daily intake of toxic metals. Products manufactured in the United States and India were equally likely to contain toxic metals.



EPA chemists in
metals analysis lab

THE RESULT:

The studies have had repercussions around the world. As a direct result of this research, several nations have taken steps to more strictly regulate the content and labeling of the products. Closer to home, the regional laboratory has continued to make itself available to public health officials investigating the causes of poisoning of patients. On several occasions, the laboratory has analyzed items in the homes of children admitted to hospitals with lead poisoning.