

A \$9-million birthday present

How would you spend \$9 million if you were 10 years old? For the Toxic Metals Research Program at Dartmouth, the answer is clear: continue to study the impact of arsenic, mercury, and lead on human health. A recent \$9-million grant from the National Institute of Environmental Health Sciences brings the total funding for Dartmouth's Center for Environmental Health Sciences (CEHS), where the toxic metals program is housed, to approximately \$58 million, according to CEHS director Joshua Hamilton, Ph.D. While the goal of the Toxic Metals Research Program hasn't changed since it was founded in 1995, its research is anything but stagnant.

Among the program's key findings have been that even very low levels of arsenic exposure can increase the risk of getting cancer; that arsenic, like mercury, can disrupt normal hormone function in animals; and that large and complex food webs are, interestingly, very resistant to the bioaccumulation of some toxins.

Horn: "We don't like to toot our own horn," says Hamilton, who also directs the toxic metals group and is a professor of pharmacology and toxicology at DMS, "but I have to say that we believe that we are one of the premier research programs in the country, probably in the world, studying arsenic and other toxic metals." The toxic metals program and CEHS are unique because they consist of several scientists studying just a few metals. Currently, there are about 14 CEHS studies underway on arsenic alone. "In the early days, we were one of the few programs studying [arsenic] at all," Hamilton adds. "Over the last five years or so, arsenic has become a very hot topic."

In 2001, Hamilton's research was cited in Congressional testimony by Christie Todd Whitman, the former head of the Environmental Protection Agency, as evidence to support the lowering of the drinking-water standard for arsenic from 50 parts per billion to 10 parts per billion. And Hamilton, as well as DMS epidemiologist Margaret Karagas, Ph.D., served on committees that evaluated the EPA's arsenic standard prior to the change, which goes into effect in 2006. It "feels pretty good," says Hamilton, "to be able to contribute to the national debate and to take our results from the lab directly out into the real world." He estimates that 25 million people in the U.S. will be better protected from the health effects of arsenic under the new standard. CEHS also has an outreach project focused on lead poisoning prevention and awareness in underserved minority populations in Manchester, N.H.

While two-thirds of the CEHS faculty members are from the Medical School, the center also includes faculty from Dartmouth College's chemistry, biological sciences, earth sciences, and environmental studies departments. "Most of the issues we are dealing with are environmental health- and toxicology-related questions," explains Hamilton, "but we really think it's important to partner with people in some of the other sciences [too]." JENNIFER DURGIN



Adachi-Mejia studied PG-13 movies with prominent tobacco brand placements; the *Men in Black II* alien behind her appears in another scene with a Marlboro carton.

Play, even without pay, for tobacco

It's a bird! It's a plane! No, it's Superman . . . zooming past giant billboards plastered with cigarette brands. Not too long ago, tobacco companies paid big bucks to have their products placed prominently in movies—even those aimed at young audiences, like *Superman II*. Although the practice of paying for tobacco brand appearances (TBAs) in movies is now banned, tobacco brands still appear regularly in movies, according to a recent DMS study in the *Journal of the American Medical Association*.

In 1998, an agreement was signed to settle a lawsuit against tobacco companies by state attorneys general. "One of the purposes of the [agreement] was to limit the amount of advertising that kids were being exposed to," says Anna Adachi-Mejia, Ph.D., principal investigator of the study. One provision of the agreement prohibited tobacco companies from paying to place their products in movies.

Hits: To see what effect that provision has had, Adachi-Mejia and her colleagues examined the top 100 box office hits for the four years before and the four years after the 1998 agreement. They found that the total number of movies with TBAs had indeed decreased—from nearly 21% to under 11%—but that the biggest drop was in R-rated movies. The number of PG-13-rated movies with TBAs had not changed significantly.

"It was surprising and alarming to us that there didn't seem to be a change with the youth-targeted movies," says Adachi-Mejia. The number of R-rated movies with TBAs dropped from about 30% before the agreement to 13% after the agreement. But the slight decrease recorded in the percentage of PG-13 movies with TBAs (from 15% to just under 12%) was not considered statistically significant.

"We know that kids are really affected by what they see," explains Adachi-Mejia. Two of her colleagues—Madeline Dalton, Ph.D., and James Sargent, M.D.—have published studies showing that the more children are exposed to smoking in movies, the more likely they are to begin smoking. Superman will be back on the big screen next summer in *Superman Returns*. Adachi-Mejia hopes that this time he'll steer clear of tobacco billboards. KRISTEN GARNER