Your brain on mercury

New research suggests the toxic heavy metal is linked to dementia

BY JASON KORNWITZ

Recent research by professor Richard Deth and academic colleagues in Germany suggests that long-term exposure to mercury may produce Alzheimer-like symptoms in people.

Deth also discovered a probable biological mechanism through which mercury can destroy neurological brain function in humans.

The findings were reported this month in a study published in the Journal of Alzheimer’s Disease.

The team of researchers conducted a literature review of more than 100 experimental and clinical studies on mercury exposure in cell models, animals, and humans. They found that animals exposed to mercury exhibited many of the pathological changes associated with the Alzheimer’s disease, including memory loss, poor cognitive performance and confusion.

The researchers don’t have enough evidence to conclude that mercury exposure definitely causes these symptoms in humans, but data indicates a need to restrict exposure as a precautionary measure.

“Mercury is clearly contributing to neurological problems, whose rate is increasing in parallel with rising levels of mercury,” said Deth, a professor of pharmacology in the Bouvé College of Health Sciences. “It seems that the two are tied together.”

Mercury, one of the most toxic natural substances, is found in some species of fish, in amalgam dental fillings and in energy-saving fluorescent light bulbs. Mercury emissions from coal-burning power plants enter the food chain.

The heavy metal evaporates at room temperature, turns into a gas, enters the body, crosses the blood-brain barrier and gets trapped inside the brain, where it accumulates over time.

Deth found that mercury exposure impairs cognitive function by reducing the efficacy of selenium, an antioxidant that helps keep the brain healthy by suppressing damaging chemical reactions in humans. Mercury binds to selenium, said Deth, promoting “oxidative stress” and decreasing the amount of available antioxidants. Nerves stop functioning normally, cognitive impairment sets in and cells die.

Deth’s coauthors on the paper, titled “Does Inorganic Mercury Play a Role in Alzheimer’s Disease? A Systematic Review and an Integrated Molecular Mechanism,” include colleagues from the Institute of Translational Medicine, Konstanz, all in Germany.

Turning vices into virtues

Program helps formerly incarcerated women gain confidence, ‘develop a new mindset’

BY SAMANTHA FODROWSKI

Tianna Oakley-Perry was recently released from prison after serving time for selling cocaine. But she left with more than good luck wishes.

A program developed through a collaboration between Northeastern University and the Boston Public Health Commission has prepared Oakley-Perry to recast herself as a small-business entrepreneur by helping her follow through on her interest in computing. She plans to enroll in computer support classes this January, with the ultimate goal of opening her own business.

It’s a goal she shares with the cohort of women who graduated last month from the Safe and Sound Return Entrepreneurship Training Institute.

The program was invaluable in helping Oakley-Perry reach her business goals, she said. But hearing from peers who were successful was especially heartening.

“Real people come in to talk to us; real people with real-life issues from incarceration, that’s very, very important,” said IUHR director Hortensia Amaro.

The program was invalu-able in helping Oakley-Perry reach her business goals, she said. But hearing from peers who were successful was especially heartening.

“Real people come in to talk to us; real people with real-life issues from incarceration,” she said. “That gives you a sense of hope ... it’s like, ‘Wow, I learned something new and met someone I can relate to.’ And when your career coaches come in, they don’t talk at you, they listen, and coming from incarceration, that’s very, very important.”

Oakley-Perry joined her classmates at the graduation ceremony at the health commission, where the women gave presentations on their future education and business plans, and received certificates for completing the program.

“Entrepreneurship can become a medicine for a lot of problems,” said William Tita, a College of Business Administration lecturer in entrepreneurship and innovation. “Their vices, put in another context, can be virtues. The women re-entering the community have faced monumental challenges and have lost confidence in themselves. This program helps them develop a new mindset.”