

intermediate levels of PCB can be disposed of in EPA-approved landfills or an approved high efficiency boiler. However, liquids with more than 500 parts per million PCB must be burned in an approved incinerator—but there are none available for commercial use in the United States. Two incinerators have undergone trial burns of PCB and may be approved in the near future. □

Cookies, caramels and cavities

Cream-filled chocolate cookies are more damaging to the teeth than is pure sugar, and potato chips are as bad as caramels, according to a study done with rats at the National Institute of Dental Research. The findings are the first reported for a new test of the decay-causing potential of specific foods. In the procedure, developed by William Bowen and colleagues, rats are fed nutrients by stomach tube, so only the test food touches their teeth (SN: 12/8/79, p. 397). An automatic feeding machine provides the test food as a powder to each animal 17 times a day.

Chocolate cookies with a soft filling, sugared breakfast cereal and sugar-coated chocolate candy, as well as pure sucrose, were at the top of the cavity-potential list. Potato chips, caramels and chocolate bars were somewhat lower. Unsweetened cereal, starch and sucrose mixed with dicalcium phosphate caused the fewest cavities. In addition, Bowen reports that as the number of daily "sucrose meals" goes down from 17 to 3, the number of cavities drops almost 60 percent.

"It is clearly difficult to extrapolate the results achieved in animals directly to humans, but neither can such results be ignored," Bowen says in the May JOURNAL OF THE AMERICAN DENTAL ASSOCIATION. "We think that the approach used here can establish differences in the cariogenic potential of foods in a simple, unequivocal and reproducible manner." □

No challenge on chemicals

The company that was to begin manufacture of six new plasticizers has changed its plans in the face of a recent Environmental Protection Agency decision (SN: 5/10/80, p. 294). In its first exercise of "premanufacture" regulatory power, granted under the 1976 Toxic Substances Control Act, the agency banned production of the six phthalate esters until the chemical company supplied data demonstrating the products' safety. The firm, which requested anonymity, told the EPA that it was not aware of the unpublished report linking a similar chemical with cancer and that the testing EPA requested would be too expensive. The company chose not to appeal the EPA decision. □

Dormant ribosomes and senile dementia

The cause or causes of senile dementia remain unknown, but clues to the brain pathology involved have been identified. Plaques (abnormal proteins), tangles (twisted fibers) and Hirano bodies (crystalline inclusions) without or in brain neurons may be responsible for some of the symptoms of senility (SN: 10/1/77, p. 218). Now, study of the composition of Hirano bodies leads researchers to suggest that those structures may be storage units for dormant ribosomes (material used for translating RNA molecules into proteins). If so, senile dementia may be the result of abnormal protein synthesis inside neurons, which could underlie the serious memory problems seen in senile patients. The research, done by Laura O'Brien and Alexander McPherson of the University of California at Riverside and by Kirk Shelley and Javad Towfighi of Pennsylvania State University at Hershey, is reported in the April PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

O'Brien and her colleagues maintain that Hirano bodies are strands of endoplasmic reticulum dotted with ribosomes. (Endoplasmic reticulum is the structure on which ribosomes normally sit in cells.) Use of several techniques led to this conclusion. Fluorescent dyes, which stain only RNA molecules, helped to determine that Hirano bodies contain RNA molecules. An electron microscope, microdensitometer and computer helped to show that the particles making up Hirano bodies have a distinct asymmetrical shape similar to that of ribosomes.

Interestingly, Hirano bodies (like plaques and tangles) are predominant in the hippocampus—a brain region believed to be involved in consolidation of



Hirano body (top) and closeup showing ribosomes on endoplasmic reticulum.



Photos: O'Brien et al./PNAS

short-term into long-term memory. One of the more pronounced symptoms of senile patients is that they retain long-term memory (can describe events or sustain skills learned prior to the onset of disease) but have impaired short-term memories. "Thus," O'Brien and her team conclude, "it does not appear unreasonable to suggest that the disability of short-term memory could arise because the ribosomes required for synthesis of memory-associated proteins have entered a dormant state and have been stored in a quiescent form resulting in the appearance of the crystalline Hirano bodies."

The final steps in confirming that Hirano bodies are truly ribosomes, O'Brien explained to SCIENCE NEWS, will be to put antibodies against ribosomes in the presence of Hirano bodies to see whether the antibodies react with the bodies, and then to isolate Hirano bodies and chemically analyze them. Although O'Brien says she can't see their research leading to any quick treatment for now-incurable senile dementia, she points out that ribosomal storage can be reversed, at least under certain conditions, in lower-life forms. □

Dialysis for schizophrenia: A washout?

It has been several years since renal medicine specialist Robert Cade and psychiatrist Herbert Wagemaker first reported surprising improvements in chronic schizophrenic patients who had their blood cleansed periodically by renal dialysis (SN: 7/8/78, p. 29). Laboratory analysis indicated that the procedure may have worked by filtering out an excess of an unusual compound called leucine-endorphin from the blood; Cade suggested that too much leucine-endorphin may be "a cause of some schizophrenia."

In the aftermath, follow-up research has yielded mixed results. And two of the most recent studies, presented at the annual meeting of the American Psychiatric Association, appear to cast serious doubt on the effect of dialysis in treating schizophrenia. At the National Institute of Mental Health, William E. Bunney and his col-

leagues used the "identical equipment" and treatment frequency—one dialysis session per week—that Wagemaker and Cade first reported using. After treating eight schizophrenic patients with both "sham" dialysis, where the blood is not actually cleansed, and real dialysis, the NIMH group reports it has "found no patients who responded to this intervention [with] a significant diminution of psychosis."

In the second study, John A. Caudle and his colleagues at the Charlotte (N.C.) Memorial Hospital and Medical Center tested four chronic schizophrenics with real and sham dialysis. They report "no therapeutic effect of renal dialysis on chronic schizophrenia." One patient, in fact, improved on the sham but not the real dialysis, and another patient first improved then got worse after real dialysis. □