

## Organochlorine Residues in Human Adipose Tissue

Residue	Possible origin	Frequency of detection, %
Total DDT	DDT and its analogs	100
<i>trans</i> -Nonachlor	Chlordane/heptachlor	97
Heptachlor epoxide	Chlordane/heptachlor	96
Oxychlordane	Chlordane/heptachlor	95
Dieldrin	Aldrin/dieldrin	95
$\beta$ -Benzene hexachloride	BHC	94
Hexachlorobenzene	Chlorinated benzene manufacture	93
Polychlorinated biphenyls	PCBs	23
$\gamma$ -Benzene hexachloride	Lindane	2
Other BHC isomers	BHC	<1
Mirex	Mirex	<1

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*Limits of detection: 10 to 20 parts per billion (or 10 to 20 micrograms per liter)*

## Pesticides: The human body burden

Government data released last week not only confirm that many humans in this country have been polluted by non-work-related exposures to toxic pesticides, but also provide some gauge of the median levels of these pollutants in the general population. At a National Institute of Environmental Health Sciences seminar in Research Triangle Park, N.C., Robert S. Murphy reported on organochlorine-pesticide residues in human-blood serum. Murphy, who works for the National Center for Health Statistics in Hyattsville, Md., presented newly analyzed data collected in the second Health and Nutrition Examination Survey (HANES II). Chlordane, dieldrin, heptachlor and DDT were among the pesticide residues identified.

These chemicals are worrisome not only because of their established toxicity, but also because they are lipophilic, or fat seeking. As such, they accumulate in adipose tissue and are seldom shed by the body (except, for example, in the breast milk of nursing mothers).

Murphy said that the rough data show younger individuals were usually less likely to exhibit detectable levels of a chemical, but that when residues were found, younger individuals generally had

slightly smaller accumulations. The exception was DDT; its related residues appeared in virtually everyone sampled. Admittedly, quantities were small. DDT was found in 35 percent of the blood sampled, but only at a mean 3.3 parts per billion. DDE appeared in more than 99 percent of the blood, but only at a mean 11.8 ppb. (DDE is a DDT-breakdown product.)

Murphy warns that these preliminary figures have not yet been adjusted to account for certain factors, such as for the loss (from contamination) of blood samples in western states, for that proportion of each age group that refused to give blood, and for the intentional oversampling of low-income groups, the young and the elderly. However, each percentage point could represent roughly 1.5 million persons once the final weighting adjust-

ments are made.

A related Environmental Protection Agency project — the National Adipose Tissue Monitoring Survey — has also detected widespread human contamination from organochlorine pesticides (see table) in the 785 specimens it examined. Moreover, additional HANES-II data (based on an analysis of roughly 6,000 urine samples) identified residues of six pesticide-related phenols, of four carbamate-pesticide metabolites, and of what appear to be eight metabolites of organophosphate insecticides.

It's not yet known whether there are adverse health effects associated with the pesticide residues found, though no overt, related health problems appeared during the medical exams that accompanied the biochemical surveys. — J. Raloff

## NAS panel sees 'no scientific need' yet for a U.S. space station

The National Aeronautics and Space Administration has been hard at work on plans for a manned U.S. space station, and agency head James Beggs said in July that he expected a White House go-ahead within 6 to 12 months (SN: 8/6/83, p. 87). At issue, however, has been the matter of the multi-billion-dollar project's justification, beyond the general themes of technological advancement and matching the Soviet goal of a permanent manned presence in space. The Defense Department has said that it has yet to identify a military mission that could not be done as well by unmanned satellites, and now a National Academy of Sciences panel reports that it sees "no scientific need for this space station during the next 20 years."

A variety of "high-priority" objectives in the space sciences have been cited in recent years by the Academy's Space Science Board (SSB), some for earth-orbital studies and others embodied in the interplanetary missions proposed by the NASA-chartered Solar System Exploration Committee. But the means of launching and tending such missions, says an SSB report to NASA released this week, either exists already or is under development, in the form of the space shuttle, booster stages to augment it and old-style expendable rockets.

The SSB even examined a set of mis-

sions specifically proposed by NASA as possible candidates to take advantage of the station's presence in the 1990s, but the panel concludes that very few of them "would acquire significant scientific or technical enhancement by virtue of being implemented from this space station."

There has certainly been a reduction in the number and scope of space-science programs, particularly interplanetary missions, in recent years, but the SSB suggests that the lack of a space station has not been the problem. "One reason for the present slow pace is the delay in bringing the shuttle and its upper stages to full operational status," says the report. "Another is that we have not yet learned how to use the shuttle efficiently and effectively as a manned orbiting laboratory." Let's get walking, the report implies, before we run.

The SSB acknowledges that such a station may, of course, end up being built anyway—for reasons "other than or in addition to those of space science alone." If that comes to pass, says the panel, it is hoped that the ranking of any scientific missions involving the station would be "determined by scientific priority rather than the nature of the launch or support system required." Furthermore, the SSB "urges that the scientific program be structured so as to be protected from delay in space station development or

changes in its capability."

The report is actually two, of which the first—about whether there is in fact a scientific need for a space station—is only three paragraphs long. The second document—about the conduct of "space science in a space station era"—takes eight. And most of it, like the warning about priorities, suggests that the SSB members are mindful that scientific concerns could be short-changed in a space station program conceived at great cost for non-science reasons. Instruments that could best be used by deploying them from the station as separate "free-fliers," for example, ought to be treated that way, notes the SSB, to protect them from possible contamination aboard the station and from possible limits in the station's aiming accuracy. In addition, there should be a capability to retrieve such devices from a wide variety of orbits.

The station could provide significant opportunities for diverse research, says the report, but it cautions that "realization of those opportunities would depend on the extent to which the capability to carry out space science research is kept viable, important experimental and theoretical activity is continued, and new endeavors are initiated while the space station is being developed." Otherwise... The SSB's message is clear. — J. Eberhart