bringing the telescope back. "We could probably save a half a billion dollars by doing the refurbishment in space," says Samuel W. Keller, NASA's deputy associate administrator for space science and applications.

Of course, it is President Reagan's endorsement of the space station that makes it possible to contemplate such an option. The idea is to include facilities that would make the station a kind of orbital dry dock for space telescope, as well as for later space observatories such as the x-ray telescope AXAF or the infrared telescope SIRTF. (One House staffer calls this the single most important use for a space station.)

Ideally, space telescope would be brought to the station not by the shuttle but by a remotely controlled robot spacecraft known as an "orbital maneuvering vehicle" (OMV). NASA plans to ask for OMV development money in the fiscal year 1986 budget. It would be based at the space station, it would burn hydrogen/oxygen fuel—much cleaner than the shuttle's hydrazine for working around the telescope—and it would be able to boost the telescope well above shuttle altitudes, virtually eliminating the atmospheric drag problem. In short, it would remove the shuttle from the process entirely. The OMV would also make it much easier to implement a regular maintenance schedule.

The down side to this rosy scenario is that the initial modules of the station will not reach orbit until 1992 at the earliest, which is 6 years after the launch of space telescope. How long can the telescope wait for that first refurbishment? Will NASA have to bring it home anyway?

Impact on future missions. The science community is understandably nervous about all this. The savings from a space station will not come soon and are hypothetical in any case. Meanwhile, missions such as AXAF and SIRTF have been marking time for nearly a decade because of space telescope. What happens to them now if the maintenance and refurbishment budgets, now estimated at $50 million per year, start to skyrocket? Will the new missions be further delayed? Or will NASA or Congress or the White House finally have to put a cap on space telescope?

"It's going to be a continuing tradeoff," says Keller, "especially as this family of observatories develops. Given certain budgetary constraints, do you concentrate on one, or spread your resources over the whole spectrum? That's a value judgment that the community itself will have to make."

—M. MITCHELL WALDROP

Carcinogenesis Without Controversy

After a prolonged effort, the White House science office has published its guide to the science of cancer-causing chemicals. It was released for public comment in the *Federal Register* on 22 May. The purpose of the report, according to the chief editor Ronald Hart, director of the National Center for Toxicological Research in Jefferson, Arkansas, is to produce "a document saying what is agreed and not agreed in the science of carcinogenesis for use in risk analysis by government agencies."

This is the Administration's second attempt to write a scientific basis for a government cancer policy. The first was scrapped in 1983 after the White House received many critical comments.

"It was a massive task. People may not realize how massive," Hart says of the heavily footnoted and cross-referenced paper. "It nearly killed me." The reviewers this time have responded favorably.

One of the stronger critics, Perry Gehring of Dow Chemical, says the report "does a better job than any document addressing the subject prior to this." He was unhappy with the report's tendency to favor what he sees as an overcautious philosophy on cancer. For example, he thinks more weight should be given to human epidemiological data and says it is "utter nonsense" to regard data on rats as more valuable than human data. He believes the report tends to do this. Gehring also argues that the risk models cited in the report can "grossly overproject the risk we know man is incurring." Nevertheless, he concedes this is the "most comprehensive" paper on carcinogenesis he has seen.

Environmentalists who were sharply critical of the Administration's 1982–1983 draft report are pleased with this one. Ellen Silbergeld, a neurotoxicologist at the Environmental Defense Fund, says, "It affirms the validity of animal studies" as a way of identifying carcinogens. "It affirms a single model for the risk of chemical carcinogenesis, throwing out the old genotoxic-epigenetic notions [distinctions based on mutagenicity]." And "it says that chemical carcinogens are a major problem requiring regulation."

The report is broadly framed, which is likely to mute opposition. It does not break new ground but instead describes what the authors call the consensus on the "state of the science." The most controversial aspects are likely to be sections that rule out the use of "threshold" theories in figuring risks. Thus, the report says that if a chemical is known to cause cancer, one cannot assume there is any "threshold" level of exposure below which the effect does not occur.

Chemicals that cause cancer in lab animals are to be treated as "suspect human carcinogens." And the report says that it is best to estimate risks for these problem compounds in a linear fashion. When data are hard to get—the "usual case," the report notes—the correct approach is to extrapolate in a straight line from effects measured at high doses to calculate effects that might occur at low doses. That straight-line technique is the "preferred" one.

Hart believes these principles and the extensive discussion backing them up will receive broad support in the scientific community. Before publication, they were read by 81 experts from environmental groups, industry, academia, and government laboratories. According to Hart, the paper was rated "very good" or "outstanding" by 75 percent. "Five percent didn't like it, meaning that we achieved the 95 percent confidence level." Hart says jokingly: "That makes it a significant report."

—ELIOT MARSHALL

Federal Court Strikes Down Baby Doe Rules

A federal district court in Manhattan has pulled the plug on the government's notorious "Baby Doe" regulations. Judge Charles L. Brieant, Jr., said they were "invalid, unlawful and must be set aside."

The judge took his cue from a ruling by the circuit court of appeals which denied the government's plea for access to the hospital records of "Baby Jane Doe," an infant born with grave defects and for whom surgery was deemed undesirable.