al Institute of Child Health and Human Development, the seventh largest institute which had a budget last year of $221 million. Lipsett has been director of NIH's Warren G. Magnuson Clinical Center since 1976.

The appointments still leave several top NIH posts vacant, including the directorships of the institutes for heart, lung, and blood research, for dental research, and for neurological and communicative disorders. In addition, director of the Institute on Aging, Robert Butler, will leave his position next month.—***Marjorie Sun***

NASA Cuts Flights, Sets New Shuttle Price

The National Aeronautics and Space Administration (NASA) has sharply reduced the number of space shuttle flights expected over the next 12 years, from 487 to 312, and has raised the price of launching a payload by 85 percent. However, the agency maintains that the shuttle will still be competitive with Europe's Ariane rocket, which has lately loomed as a serious challenge to NASA's dominance of the launch market.

Maintaining the earlier flight model would require a substantial front-end investment to boost capacity for building external tanks and solid rocket boosters. In the current budgetary climate NASA has no hope of that. The resulting cutback in flights was a major factor in the price increase, although it was already clear that NASA's original price schedule, formulated in 1977, fell far short of the actual costs of launching the shuttle. The price discrepancy was recently the subject of a scathing review by the General Accounting Office, which pointed out that NASA was heavily subsidizing users of the shuttle at the same time its own science and applications programs were being cut back (*Science*, 16 April, p. 278).

With its new prices, effective 1986, NASA will try to recover out-of-pocket expenses for the nongovernment payloads. It has given up its original goal of recovering its total operations cost over a 12-year period.

The new shuttle fees will not apply to the Department of Defense (DOD). The Pentagon currently gets a very low price—strongly criticized by the General Accounting Office—and revisions are still being negotiated. The issue is clouded by the recent action of the Senate Commerce committee, which recommended a NASA budget requiring DOD to start paying an extra $409 million for shuttle services (*Science*, 4 June, p. 1085).

In 1982 dollars the old price for a full shuttle payload bay comes to $38.32 million. The equivalent new price will be $70.76 million. In comparing the shuttle with alternative launchers, however, NASA price analyst Barbara Stone points out that most payloads will occupy only a fraction of the shuttle bay, and thus will pay only part of the full price. For example, she cites a small communications satellite launched into low earth orbit by the shuttle and boosted from there to geosynchronous orbit by an expendable upper stage. Cost in 1986: $26 million. The estimated cost of launching that same satellite on one of NASA's Delta rockets would come to $38.5 million. And, according to a U.S. representative of Arianespace, the cost of such a launch on Ariane would be approximately $32 million.

—***M. Mitchell Waldrop***

OSHA's New Thoughts on Cancer Policy

A top official at the Occupational Safety and Health Administration (OSHA) says that a chemical must be proven to be a human carcinogen before the agency will regulate it, a statement that flies in the face of established cancer risk policy within the federal government.

OSHA deputy assistant secretary Mark Cowan wrote in a letter dated 13 May, 1982 to the director of the National Institute of Occupational Safety and Health (NIOSH), that "In order to promulgate a regulation, OSHA must not only find a substance to be carcinogenic to man but must demonstrate that the substance poses a significant risk to occupationally-exposed workers."

Other federal agencies and OSHA itself have regulated substances that are classified as potential human carcinogens solely on the basis of animal data, without supporting epidemiological evidence. Indeed, OSHA's own cancer policy, published in the *Federal Register* on 25 January 1980, states that positive results in animal studies "will be used to establish the carcinogenic hazard to workers."

Cowan's correspondence was a response to a letter from NIOSH director Donald Millar. Millar noted that the World Health Organization's International Agency for Research on Cancer judged last fall that formaldehyde should be considered a potential human carcinogen. But OSHA seems determined that it will not regulate the chemical, short of clear epidemiological evidence.

Concern about formaldehyde has recently been heightened by reports that five male workers have developed rare nasal cancers after exposure to the substance. The case reports are particularly worrisome because rodents exposed to formaldehyde in tests developed similar nasal cancers.

NIOSH is investigating the one worker of the five who is still alive. According to Phillip Landrigan, deputy director of NIOSH, the worker is a middle-aged engineer who set up equipment in New England textile plants that bathes fabric in formaldehyde, which imparts a permanent press finish. NIOSH was alerted to the case because the worker's wife notified the agency.

Landrigan said the worker was exposed to intermittent high doses of formaldehyde of several parts per million, but exact levels of exposure are undetermined. He cautioned that one case does not prove that formaldehyde is definitely a human carcinogen but said, "I hope this stimulates more research." The NIOSH findings have been submitted for publication.

The four other cases were cited in a memorandum to OSHA director Thorne Auchter by Peter S. Infante, an OSHA epidemiologist. He reported that two industrial workers and two pathologists have died of nasal cancers after formaldehyde exposure.

Auchter was advised by an aide, John F. Martonik, that the case reports cited by Infante were "suggestive evidence of human carcinogenicity at this time, at the very most. . . . The reports should be further investigated."—***Marjorie Sun***