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Endocrine Disruptors: Epidemiologic Approaches

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Despite considerable public interest and research activity, the scope and magnitude of the impact of putative endocrine disrupting chemicals on human health are largely unknown. Adverse effects have been associated with hormonally active chemicals in wildlife but few studies have documented effects in humans exposed at ambient levels normally encountered in the environment. In 2000, NIOSH, EPA, NIEHS, and NCI announced a joint program to support research on exposure to endocrine disruptors and adverse health effects in humans, with a focus on epidemiologic approaches. Effects of interest included reduced fertility or altered reproductive function, pregnancy outcomes and developmental abnormalities of offspring of exposed women, hormonally mediated cancers among offspring exposed in utero, and endocrine related malignancies. Study designs that clearly differentiated exposure categories and used quantitative exposure assessment methodologies were of special interest.

Twelve awards totaling almost \$19 million were provided for studies to be conducted over a period of three years. The epidemiology studies have investigated effects on reproduction and development and other health outcomes among exposed subjects or their offspring. Putative endocrine disrupting chemicals under study include dioxin compounds, polychlorinated and polybrominated biphenyls, heptachlor, DDE, and other polyhalogenated persistent pollutants, perfluorooctyl, and phthalates. Human exposures to these chemicals have been documented previously and their presence in human tissues has been detected. Investigative teams are using a variety of study designs, and methods to measure and quantify exposure and to identify susceptibility, including biomarkers. All of the studies will develop a quantitative estimate of risk of health effects associated with exposure.

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