Medical Toxicology and Public Health—Update on Research and Activities at the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry

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The following is an update on research and activities in which medical toxicologists are actively involved at the National Center for Environmental Health (NCEH) and the Agency for Toxic Substances and Disease Registry (ATSDR) at the Centers for Disease Control and Prevention (CDC). The *Journal of Medical Toxicology* will periodically highlight these activities to illustrate the growing relationship between medical toxicology and public health.

Radiation Studies Branch (NCEH, CDC)

Until September 11, 2001, the primary role of the Radiation Studies Branch (RSB) at NCEH was to evaluate communities near nuclear power facilities, nuclear material generation facilities, and nuclear waste sites to estimate the radiation exposure in such communities. The events of September 11th revealed our nation's vulnerability to terrorist attacks, and the public health focus of RSB shifted to the nation's preparedness for intentional radiological or nuclear incidents. The National Response Plan specifically calls for the Department of Health and Human Services (and by extension, the CDC) to assume responsibility for a variety of activities in the aftermath of radiological or nuclear incidents. These activities include the preparation for the medical casualties associated with a radiological event.

RSB is engaged in various response activities, and medical toxicologists are assisting in researching, developing, and refining a highly detailed Investigational New Drug protocol and an Emergency Use Authorization application for the cytokine, filgrastim (Neupogen®). Filgrastim is the cytokine stored in the Strategic National Stockpile to treat hematopoietic toxicity resulting from acute radiation syndrome (ARS). The RSB would play a critical role in overseeing the use of filgrastim and in

conducting medical surveillance of patients who receive this drug as part of their ARS treatment regimen.

Division of Laboratory Sciences (NCEH, CDC)

Medical toxicologists at NCEH are collaborating with staff from the Northern California Childhood Leukemia Study, headed by Dr. Patricia Buffler at the University of California at Berkeley, to address the risks associated with childhood leukemia. Now in its ninth year, this study is examining the largest gathered cohort of child, leukemia patients through participating hospitals in northern California, and the study is addressing demographic, genetic (chromosome rearrangements and polymorphisms) and environmental risks associated with developing this serious childhood disease. Staff of the Division of Laboratory Sciences at NCEH will be measuring maternal biologic specimens for a spectrum of chemicals that include, non-persistent pesticides, polycyclic aromatic hydrocarbons, volatile organic compounds, folate, and cotinine.

Staff from the New York State Department of Health, staff from the CDC, and other interested parties are serving on an advisory workgroup to determine whether pregnant women should be screened with blood lead measurements, and if so, what

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predictors may be used to determine which pregnant women to test. Other related issues include advice for pregnant women with elevated blood lead levels and potential treatments.

Health Studies Branch (NCEH, CDC)

Postmortem testing on biologic specimens is often utilized in cases of suspected poisoning or in cases where the cause of death is not well established and/or criminal intent is suspected. Appropriate reference ranges for many analytes are not firmly established in this situation. Interpreting results from postmortem testing is difficult, not only because of the lack of well-established reference ranges, but also because analyte concentration can be influenced by many factors, including environmental contamination and postmortem redistribution.

The CDC is collaborating with the Fulton County Medical

Examiner's Office in Atlanta, Georgia, to analyze postmortem levels of certain analytes. This collaborative work is expected to help clarify the fact that postmortem testing for these analytes cannot be interpreted solely by using established reference ranges that are "normal" for a living population. Proper methodology will include identifying a suitable postmortem subpopulation for sampling and adhering to strict sampling procedures and specialized collection materials to minimize contamination. The potential public health benefits of this study include avoidance of unnecessary and costly investigations into suspicious deaths that are based exclusively on postmortem laboratory testing without any concurrent clinical history of poisoning.

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