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Project 00215, (Dioxins as Food Contaminants), dated  
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**Description Notes**

Individual Safety Plan for Technical Plan  
Project 00215  
(Dioxins as Food Contaminants)

- A. Chemical or Process to be Used : Analysis of selected foods such as fish, milk, meat, gelatin and rice for residues of polychlorinated dibenzo-p-dioxins (dioxins). Preparation of stock standard solutions containing 20 pg/ul to 100 ng/ul of reference dioxins. Synthesis and purification of mg quantities of dioxins in a toxic chemical handling laboratory outfitted with HEPA filter-equipped glove boxes for weighing samples and conducting syntheses.
- B. Nature of the Hazard Involved : Carcinogen or co-carcinogen; hepatotoxic and teratogenic agent.
- C. Magnitude of the Hazard : Some of the dioxin congeners are highly toxic and tumorigenic compounds requiring care in handling. Generally, analytical work requires use of very small (pg) amounts of reagents. Weighing of dry powder and synthesis work is conducted in a HEPA-filter equipped hood to minimize or eliminate risks.
- D. Special Precautions Involved : Precautions required for handling toxic or radioactive compounds are employed. A glove box is used to weigh out the dry chemicals. Dilution of standard solutions is conducted in a chemical hood. Gas chromatographic exit ports are fitted with a charcoal filter and oil trap in the exit line which is vented in the hood.
- E. Type of Experiments to be Carried Out : General types of trace analyses and development of methodology for trace analysis.
- F. Amount of Chemicals Used : Picogram to Nanogram quantities of dioxins are used generally. Moderate quantities of solvents including hexane, acetone, methylene chloride, methanol and acetonitrile are also used.
- G. Persons Authorized to Conduct Experiments : Principal investigators will be David Firestone, Ph.D. and Richard Niemann, Ph.D. <sup>a/</sup>Synthesis of dioxins in the Toxic Chemical Handling Laboratory (Room 4032) will be carried out by Akiva Abramovitch, Ph.D. and Samuel Page, Ph.D.
- H. Laboratory Practices and Engineering Controls to be Employed : The dioxins will be handled with the same techniques used in handling radioactive materials. The subject materials will be confined to a limited, identified area. Persons working with the dioxins will wear protective clothing. Wastes will be stored in the laboratory in properly labeled containers until they can be destroyed by approved procedures. Unauthorized persons are not permitted in the laboratory. All glassware is cleaned with solvents, detergents and dichromate cleaning solution in the subject laboratory. Glassware is not cleaned by building housekeeping personnel. Exposed personnel are monitored through a special clinical testing procedure arranged with U.S. Public Health Service in South HEW Building.

<sup>a/</sup> Rooms 4048 and 4446.

1. Protective Clothing : Lab coat is worn when working in the laboratory. Surgical gloves are worn when working with microgram or larger quantities of dioxins.
2. Eye Protection : Safety glasses. The laboratory shall also be equipped with a static and portable eye wash.
3. Eating, Drinking, Smoking Policy : None in Laboratory
4. Pipetting : None by mouth. A suction bulb device will be used.
5. Personal Hygiene : Hands and forearms will be thoroughly washed after each manipulation and before lunch and coffee breaks.
6. Work Area Identification : Door of laboratory will bear a "Chemical Hazard" sign.
7. Access Control : Unauthorized persons are not permitted in subject laboratories. Access to the Toxic Chemical Handling laboratory will be limited and laboratory will be locked when not occupied by authorized personnel.
8. Work Surfaces : Work surfaces will be covered with appropriate materials such as absorbent paper with plastic lining to contain spills. Trays shall be used under chromatographic fraction collectors and to hold reagent solutions.
9. Primary Containment Equipment : No special containment equipment is required.
10. Use of Analytical Instrumentation : Gas chromatographs are vented to hood through a carbon filter and oil trap.
11. Respirators : None required.
12. Special Chemical Storage : Chemicals are stored in dedicated, isolated areas.
13. Special Barrier : Not available in FOB 8.
14. Minimum Working Quantities : Not applicable.
15. Laboratory Transport : Trays or other safe carriers.
16. Special Housekeeping : Laboratory areas will be kept neat and clean. Dry mopping will not be allowed.
17. Decontamination Procedures : Wipe affected areas with suitable decontaminating fluid followed by soap and water. Clothing known to be contaminated should be disposed of in plastic bags suitable for transport to incinerator for disposal.

18. Disposal : By arrangement with Safety Office. Organic solutions will be decontaminated, if necessary, by irradiation in a photochemical reactor in room 4048.
19. Safety Facilities : Eyewash.
20. Exhaust/Ventilation : A general problem area in FOB 8; however, hazardous work (synthesis, weighing out dry powders) will be performed in glove boxes fitted with HEPA filters.

As amended 9-9-81