

SUPPLEMENT TO THE ENGINEERING SAFETY POLICY PROTOCOLS FOR SAFETY ANALYSIS OF PROJECTS USING MERCURY

The Engineering Safety Policy, established in Feb-1996, requires the Faculty/PI for any new project to initiate a formal Project Safety Analysis (PSA) for the proposed project. The PSA will contain a description of the proposed project, identify the location and facilities to be used, identify all potential hazards associated with the project, and identify all controls necessary to prevent potentially harmful releases and/or human exposure. Risks and hazards are appropriately identified by the use of techniques from Systems Analysis and Systems Safety Analysis, such as "Hazard and Operability Analysis (HAZOPS), Failure Mode Analysis, and other similar techniques.

The PSA must include not only the identification of all necessary controls, it must also identify the cost of the requisite controls and the source of funding to implement these controls. Control measures include: engineering controls, administrative controls, personnel training, personnel protective equipment (PPE) and clothing, emergency response equipment, and spill control & cleanup. The PSA must identify the ultimate fate of the materials and equipment to be used, including cleanup, decontamination, and waste disposal. Mercury usage requires biological monitoring of blood and urine of all affected personnel, faculty & students, as well as both personal and area monitoring.

The Office of Engineering Safety is available to work with Faculty/PI to ensure that a comprehensive PSA is completed and that all control measures are in place before such a project begins. The PSA must be approved by the Manager of the Office of Engineering Safety, by the Department Head, and by the department's designated Safety Officer, BEFORE the project begins, and BEFORE any hazardous materials are brought onto TAMU properties and facilities.

Mercury is a liquid metal that is environmentally persistent and bio-accumulates in the food chain. Mercury is present in both organic and inorganic forms. All forms of mercury are toxic. Mercury poisoning can result from inhalation, ingestion, and injection or absorption through the skin. Elemental mercury poses a health hazard because it is volatile. Elemental mercury, as a vapor, penetrates the central nervous system (CNS), where it is ionized and trapped, resulting in its extreme toxic effects. Elemental mercury is not well absorbed by the gastrointestinal tract; therefore, when ingested, it is only mildly toxic. Mercury metal and mercury compounds are highly hazardous if inhaled, or if they remain on the skin for more than a short period of time. Dimethyl mercury rapidly penetrates intact skin, and most commonly available gloves/clothing. Depending on the type of mercury and dose, symptoms may appear relatively quickly (acute disease) or take a number of years to appear (chronic disease). Adverse mercury exposures typically result in long-term disability and death.

Available records indicate that the TAMU Engineering Program may lead the TAMU campus for mercury spills, mercury contamination, and other mercury-related safety problems. The engineering program has incurred significant costs for the cleanup and decontamination of properties and facilities, from mercury spills and contamination. The engineering program policy states that space in engineering facilities will not be authorized for such projects until a completed PSA has received final approval. Thus, the Engineering Program cannot responsibly approve a mercury-use project, until such time as the PSA has been completed and all necessary controls have been implemented.

The Office of Engineering Safety contends that any material, no matter what the hazard, can be used safely and without unnecessary risk, in a controlled environment, by properly trained and equipped personnel, supervised by a responsible Faculty/PI. Please contact the Safety Office to obtain a copy of the guideline for conducting PSA in the Engineering Program at Texas A&M University. A Mercury Safety Protocol is available to provide guidance in the safe use of mercury in engineering facilities, to aid in achieving the goal of a safe and healthful environment for scholarship and research.

The staff of the Office of Engineering Safety is available to facilitate your successful preparation for a safe and productive project.