

<b>Subject:</b>  <b>Hazard Analysis and Controls</b>	<b>Effective Date:</b>  October 29, 1993	<b>Initiated by:</b>  Associate Director for ES&H/QA
	<b>Supersedes:</b> P-039, Rev. 0 Dated 12/02/91	<b>Approved:</b>  Director

Various equipment needed to support the activities at the Laboratory present hazards to people, the environment, and property. It is Laboratory policy that hazards be identified and that reasonable measures be taken to prevent them from causing harm. Barriers and controls shall be established to reduce risks by separating personnel, equipment, and the environment from hazards.

Preventative measures shall include:

- Engineering changes, i. e. substitution, elimination, etc., where practical.
- Energy barriers (designed to prevent unwanted transfer of energy between an energy source or hazard and a potential target);
- Safety barriers (designed to restrict times and means by which qualified personnel may gain access to energy sources or hazardous areas, and prevent access by unqualified personnel);
- Warning devices (means of alerting people to the presence of hazards – such as signs and lights);
- Administrative controls (methods for providing an added level of controls between hazards and targets by informing, guiding, and monitoring personnel and activities).

It is always preferable to establish energy barriers as the first method of prevention, and to use safety barriers, warning devices, and administrative controls as supplements to provide the most effective measures. The confined space program is an example that includes training personnel, hazard posting, and issuing work permits. Administrative controls enhance the more effective barriers such as padlocking and fencing of confined spaces.

Development, installations, operations, and changes of barriers and controls are carefully thought out and implemented in accordance with Laboratory procedures. The need for establishing barriers and controls is determined as part of the hazard classification, analysis, review, and certification process. Suggestions for improvements to existing systems are encouraged at all times. Barrier and control methods are subject to ES&H reviews, QC inspections, and Quality Assurance audits to ensure effectiveness.

### **Reference Documents**

ESH-001, Operations Hazard Criteria  
 ESH-016, Control of Hazardous Energy Sources  
 ESH-017, Hazard Analysis Procedure