Protocol for Investigation of Potential Environmental Adverse Health Effect Clusters

1. Purpose / Background
Apparent clusters of symptoms or illnesses are possible in all large populations, including university communities such as MIT. These clusters are sometimes due to the health effects of actual local exposures, but are more often coincidental and due to the random expected incidence of medical conditions.

For instance, since cancer is a common illness that affects older persons, the occurrence of several new cancers is not unexpected simply due to chance in any large population with older adults. Similarly, non-specific symptoms such as fatigue, headaches or respiratory allergies are also very common in the general population so having more than one occupant of a work area with such complaints does not necessarily indicate an Indoor Air Quality (IAQ) problem. On the other hand, today’s “tight” buildings and the frequent re-cycling of older buildings to new uses that were not part of the original occupancy design can lead to environmental exposures that are in fact unhealthy.

This document specifies the procedures to be used by the MIT Environment, Health and Safety (EHS) office and the MIT Medical Department in joint investigations of potential adverse health effect clusters. The purpose of this standard operation procedure [SOP] is to ensure that all potential adverse health effect cluster investigations are performed in a consistent and thorough manner by MIT and that the concerns of affected MIT employees are addressed.

2. Scope
The protocol described in this SOP applies to all potential adverse health effect clusters that are investigated by EHS and the MIT Medical Department, including both cancer clusters and building related illnesses (BRI).

This protocol does not replace the obligation to comply with any local, state or federal regulatory requirements including those requirements outlined in the EHS SOP, Reporting Work Related Illnesses and Injuries of OSHA-Covered Personnel.

3. Prerequisites
N/A

4. Procedures
4.1. Notification
Initial notification of adverse health effect cluster concerns may be to either EHS or the MIT Medical Dept. In addition, Building Related Illnesses (BRIs) are sometimes reported to Facilities first as “air quality complaints” that are then referred to EHS. In the event that EHS is notified first, as soon as it is determined that the investigation falls within the scope of this SOP, EHS will inform the Occupational Medicine office within MIT Medical.
The occupational physician or nurse practitioner in the Medical Dept. will perform an initial assessment of the employee(s) reporting symptoms or illness they associate with their work environment. It is anticipated that many cases can be resolved after a confidential office evaluation of the employee by the MIT Medical clinician.

If this initial assessment indicates additional action is needed, MIT Medical will inform EHS with the employee’s permission and respecting Doctor/Patient confidentiality.

If the DLC has an EHS Coordinator, EHS will notify the Coordinator and/or other relevant officials within the DLC of the investigation.

4.2. Assessment

The Medical Dept. will collect data on the patient’s exposure history and/or request that EHS collect exposure data as indicated below.

4.2.1. Patient Exposure History (Medical Department) - In the event that the initial assessment does not resolve questions as to whether an adverse health effect cluster exists, the Medical Dept. will be responsible for completing an exposure history. The exposure history will be designed to gather information from the patient on etiological factors associated with the adverse health effect in question.

Click here for an example (Also see Section 9.2 Supplementary Documents) of an exposure history form from ATSDR.

4.2.2. Exposure Data Collection (EHS Office) - In addition to the exposure history, exposure data may also be required. Data collection will focus on those environment factors associated with the adverse health effect. MIT Medical will describe adverse health effects reported. The appropriate group(s) within EHS will conduct the data collection, i.e., IHP will investigate cases where chemical exposures are suspect, RPP will investigate radiological exposures and BSP will investigate microbiological exposures. The purpose of the data collection will be to answer the following questions:

- What chemicals, physical hazards, or biological hazards are present that are associated in reputable scientific literature with the adverse health effect(s) of concern?
- Are there known or potential pathways by which these chemicals or hazards might have impacted the affected employees? What were the likely doses that resulted from such exposures?
- In the event that a BRI is suspected, additional personnel may need to be interviewed. In this case the procedures outlined in the EHS SOPs, Assessment and Remediation of Fungi in Indoor Environments and EHS Response to IAQ Complaints will be used.

EHS will attempt to collect quantitative exposure data. In investigations where quantitative data collection is not feasible, e.g., historical exposures, qualitative data will be gathered.

4.3. Final Report - Based on the exposure history and data, MIT Medical will assess whether there are biologically plausible factors present that may account for the adverse health effect cluster or BRI. Medical will be responsible for any necessary further health-related action beyond the scope of this SOP.
EHS will draft and the Medical Department will review a jointly produced final report on the findings of the investigation. In the event that the report indicates a possible link between the environment and adverse health effect, the report will contain recommendations for corrective actions to be undertaken by the appropriate DLC.

4.4. **Communications**

4.4.1. **Affected Personnel** – The communication method for the final assessment and report to affected employees will be determined jointly by the EHS Director/Deputy Director(s), the Occupational Physician and the appropriate DLC management.

4.4.2. **DLCs** – MIT EHS will keep the relevant DLC EHS Coordinator(s) informed of all significant developments in the investigation. The DLC EHS Coordinator and MIT EHS will be responsible for communicating information from the investigation with DLC officials such as department heads, administrative offices and principal investigators.

4.5. **Confidentiality** – Confidentiality of any collected patient information is outlined in MIT Medical policy and is also guaranteed by state and federal laws (see [http://medweb.mit.edu/about/privacy/privacy.html](http://medweb.mit.edu/about/privacy/privacy.html) for details). Exposure data (personal and area samples) without personal identifiers will be shared with all potentially affected parties.

5. **Roles & Responsibilities**

5.1. **MIT Medical Department.** The MIT Medical Department Occupational Medicine office will be responsible for clinical evaluations and reports on medical issues and will consult on any Final report. The MIT Medical Department will communicate health information and opinions also directly with patients who are seen in consultation.

5.2. **EHS Staff.** EHS staff assigned to work on investigations will be responsible for leading the investigation of suspect environmental adverse health effect clusters and will work under the direction of the EHS Deputy Director/Director, with guidance from MIT Medical as indicated, to conduct an exposure assessment and produce the initial draft of any report.

5.3. **Director, EHS Office or Deputy Director.** Responsible to assign the appropriate personnel to conduct the investigation and to advise the MIT Medical Department on matters related to the overall investigation. The Director/Deputy will advise on recommended corrective actions based on investigation results and review the final report.

5.4. **Department of Facilities.** Responsible for maintaining building systems and assisting in the investigation where an analysis of the building systems is needed.

6. **Training**

Awareness training of EHS staff regarding this SOP is conducted in EHS staff meetings and though each of the programs within EHS.

7. **Data Collection Requirements**

An official hardcopy of this document exists in the EHS Office or on the EHS website. See Legal Disclaimer at: [http://ehs.mit.edu/site/content/legal-disclaimer](http://ehs.mit.edu/site/content/legal-disclaimer)
8. **Record Management**

Retention of any exposure data collected will be in conformance with the EHS Records Retention SOP. Any personal medical history or examinations will remain in the custody of MIT Medical.

9. **References**

9.1. **SOPs Referred in this Document**

- EHS-0008 Reporting Work Related Illnesses and Injuries of OSHA-Covered Personnel
- EHS-0022 - Assessment and Remediation of Fungi in Indoor Environments
- EHS-0021 - Records Retention SOP
- EHS-0070 – EHS Response to IAQ Complaints

9.2. **Supplementary Documents**

- Understanding Cancer Clusters  CA Cancer J Clin 2004; 54:273-28
  Available from URL: [http://caonline.amcancersoc.org/cgi/content/full/54/5/273#SEC2](http://caonline.amcancersoc.org/cgi/content/full/54/5/273#SEC2)

- Cancer Clusters, National Center for Environmental Health, CDC
  Available from URL: [http://www.cdc.gov/nceh/clusters/default.htm](http://www.cdc.gov/nceh/clusters/default.htm)


- Guidelines for Investigating Clusters of Health Events MMWR 39(RR-11); 1-16
  Publication date: 07/27/1990
  Available from URL: [http://www.cdc.gov/mmwr/preview/mmwrhtml/00001797.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/00001797.htm)

10. **Definitions**

**Adverse health effect cluster** – For purposes of this SOP an adverse health effect cluster is defined as a group of MIT staff, students or affiliates with an illness or related illnesses who share a common characteristic (work area, process, etc.) that could be associated with exposure.

**Cancer Cluster** – A greater than expected number of cancer cases that occurs within a group of people, in a geographic area, or over a period of time. (NCEH, CDC website)

**Building Related Illness (BRI)** – BRI is characterized by health effects including skin and eye irritations, headache, and respiratory problems affecting primarily workers in office settings. BRI is thought to be caused by indoor pollutants such as VOCs and microorganisms. BRI also considered to be exacerbated by or result from inadequate ventilation.