WORK PROCEDURES FOR ASBESTOS RELATED ACTIVITIES
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INTRODUCTION
Caltech has a number of procedures in place for identifying and managing asbestos-containing building materials. These procedures have been developed to ensure that no one is exposed to an airborne concentration of asbestos fibers exceeding specified standards during the course of their work at the Institute.

ASBESTOS MANAGEMENT
The Environment, Health, and Safety (EHS) Office coordinates with Architectural and Engineering Services, Facilities Management, and Housing to ensure that asbestos containing materials (ACM) are properly identified and managed prior to any planned work likely to disturb it. EHS activities may include:
- Bulk Sampling of suspect or presumed asbestos containing material
- Conducting exposure assessments and air monitoring
- Work area monitoring as deemed necessary.

Facilities Management maintains a group of employees that are trained to the Operations and Maintenance level for safely working with asbestos-containing materials while performing emergency maintenance and repair work.

All building occupants are cautioned not to disturb or touch damaged building materials within their work areas, and to report any damaged materials immediately to the EHS Office.

ASBESTOS NOTIFICATION
Caltech annually notifies all employees of the presence of asbestos-containing building materials on campus (See Appendix VI – Annual Asbestos Notification Letter.) In addition EH&S provides Asbestos Awareness training for employees likely to encounter ACM in their daily work activities.

PROCEDURES FOR ASBESTOS-RELATED ACTIVITIES
The EH&S Office has developed the following procedures for identifying and managing asbestos containing materials (ACM) which may be disturbed during any of the following activities:
- Demolition
- Construction
- Utility Installation
- Operation, Repair, and Maintenance Activities

The procedures, summarized here, should be conducted prior to the start of the work where ACM may be affected or disturbed.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Responsible Department(s)</th>
</tr>
</thead>
</table>
| 1.   | Determine if ACM will be disturbed by the job.  
✓ Check through the “List of Common Asbestos Containing Materials” and the “List of Caltech Buildings Built Prior to 1980”.  
✓ If any of the listed materials or products are present and are suspect, contact EHS at ext.6727. | ▪ Facilities Management  
▪ Facilities Design and Construction  
▪ Housing |
| 2.   | Survey the work area.  
✓ Conduct a visual inspection of the area where work is to be conducted.  
✓ Collect bulk samples of any suspect material that may be disturbed. | ▪ Facilities Management  
▪ Facilities Design and Construction  
▪ Housing  
▪ Environment, Health and Safety |
| 3.   | Notify requesting department of sample results.  
✓ Written report including sample results and recommended action is to be sent to the Project Manager. | ▪ Environment, Health and Safety |
| 4.   | Document results of sample analysis and location of ACM in written scope of work.  
✓ Communicate to all employees or contractors working in the area of the presence and location of identified ACM. | ▪ Facilities Management  
▪ Facilities Design and Construction  
▪ Housing |
| 5.   | Proceed with job  
✓ EHS is available for consultation and assistance as needed | ▪ Facilities Management  
▪ Facilities Design and Construction  
▪ Housing |
| 6.   | When ACM needs to be abated prior to work:  
✓ Only pre-screened Abatement Contractors are to be used  
✓ Any air sampling results generated by a contractor during abatement are to be forwarded to EHS | ▪ Facilities Management  
▪ Facilities Design and Construction  
▪ Housing |
| 7.   | Any hazardous waste, including asbestos containing material is to be disposed of in accordance with EHS procedure  
✓ All Hazardous Waste Manifests are to be signed by EHS | ▪ Facilities Management  
▪ Facilities Design and Construction  
▪ Housing |
APPENDIX I – ASBESTOS CONTAINING MATERIAL

The EPA has classified all asbestos containing material into three categories:

1. Thermal System Insulation (TSI)
2. Surfacing Materials
3. Miscellaneous Materials

THERMAL SYSTEM INSULATION

Insulation used on mechanical systems to prevent heat loss or gain and condensation. Steam and hot water lines, boiler tanks, expansion joints, fittings and other mechanical systems are commonly insulated with pre-fabricated asbestos-containing magnesium silicate. The material is typically white in color and is encased in a plaster-impregnated canvas wrapping.

Asbestos containing mud compounds are often used on elbows, valves, identification plates, miscellaneous fittings, and for other special applications on mechanical systems.

SURFACING MATERIALS

ACM sprayed or troweled on to surfaces for acoustical, decorative, or fireproofing purposes.

Asbestos has been blended in to spray-applied and troweled-on products including:

- Structural fireproofing
- Stucco
- Plaster
- Acoustical and decorative surfaces
- Joint compounds

Spray-applied structural fireproofing has been applied to structural steel (e.g. “I”-beams, decking, etc.), building shafts, and over-sprayed onto other building members. The off-white or grey material is either granular in form or soft and fluffy.

Exterior stucco, interior acoustical surfaces (e.g. “cottage cheese” ceiling) and joint compounds seaming gypsum wall boards together, have been identified as asbestos-containing, and may be present in some campus buildings.

MISCELLANEOUS MATERIALS

Products not utilized as TSI or surfacing materials are classified as miscellaneous materials. Following is a list of some examples:

- Transite Pipe
- Ceiling Tiles
- Mastic (used on floor or ceiling tiles)
- Fire Doors
- Gaskets
- Vinyl floor covering (9"x9" Floor tiles and Linoleum)
- Ductwork flexible connections
- Electric wiring insulation
- Roofing felt
- Roofing flashing
- Fume hood ducting and paneling
APPENDIX II – LIST OF COMMON ASBESTOS CONTAINING MATERIALS

The following list has been developed as a quick reference for commonly encountered ACM. This list does not include every product or material that may contain asbestos. It is intended as a general guide to highlight which types of materials should be considered suspect.

<table>
<thead>
<tr>
<th>Acoustical plaster</th>
<th>Heating ducts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt floor tile</td>
<td>High temperature gaskets</td>
</tr>
<tr>
<td>Blown-in insulation</td>
<td>HVAC duct insulation</td>
</tr>
<tr>
<td>Boiler insulation</td>
<td>Joint compounds</td>
</tr>
<tr>
<td>Ceiling tiles</td>
<td>Laboratory bench tops</td>
</tr>
<tr>
<td>Cement (Transite) Pipes</td>
<td>Laboratory gloves</td>
</tr>
<tr>
<td>Cement siding</td>
<td>Laboratory hoods</td>
</tr>
<tr>
<td>Cement Wallboard</td>
<td>Mastics (Flooring, ceiling, etc)</td>
</tr>
<tr>
<td>Chalkboards</td>
<td>Pipe insulation</td>
</tr>
<tr>
<td>Cooling towers</td>
<td>Roofing felt</td>
</tr>
<tr>
<td>Decorative plaster</td>
<td>Roofing shingles</td>
</tr>
<tr>
<td>Electrical cloth</td>
<td>Spackling compounds</td>
</tr>
<tr>
<td>Electrical panels</td>
<td>Spray-applied insulation</td>
</tr>
<tr>
<td>Electrical wiring insulation</td>
<td>Textured paints and coatings</td>
</tr>
<tr>
<td>Elevator brake shoes</td>
<td>Thermal taping compounds</td>
</tr>
<tr>
<td>Fire blankets</td>
<td>Vinyl floor tile</td>
</tr>
<tr>
<td>Fire doors</td>
<td>Vinyl sheet flooring</td>
</tr>
<tr>
<td>Fireproofing</td>
<td>Wallboard</td>
</tr>
</tbody>
</table>
APPENDIX III – LIST OF CALTECH BUILDINGS BUILT PRIOR TO 1980

Thermal system insulation and surfacing materials installed prior to 1980 are to be identified as presumed asbestos containing (PACM) until testing proves otherwise. Below is a list of those Caltech buildings that were built prior to 1980. This list is intended as a guide for campus buildings that may contain asbestos. Suspect material found in buildings not on this list should still be tested to determine if the material is asbestos containing.

Alles Laboratory
Alumni House
Arms Laboratory
Athenaeum
Baxter Hall
Beckman Auditorium
Beckman Behavioral Biology
Blacker House
Braun House
Bridge (East, West, Annex)
Brown Gymnasium
Center for Student Services
Central Engineering Services
Central Plant
Chandler Dining Hall
Church Laboratory
Crelin Laboratory
Dabney Hall
Dabney House
Downs Laboratory
Facilities Management
Firestone Laboratory
Fleming House
Gates Annex
Guggenheim Laboratory
Industrial Relations
Isotope Laboratory
Jorgensen Laboratory
Karman Laboratory
Keith Spaulding
Kellogg Laboratory
Kerckhoff Laboratory
Lauritsen Laboratory
Lloyd House
Marks House
Mead Laboratory
Millikan Laboratory
Mudd Laboratory, North
Mudd Laboratory, South
Noyes Laboratory
Page House
Parsons-Gates
Powell-Booth Laboratory
Public Events Ticket Office
Public Relations
Ricketts House
Robinson Laboratory
Ruddock House
Safety Annex
Sloan Annex
Sloan Laboratory
Spalding Laboratory
Steele Laboratory
Synchrotron Laboratory
Thomas Laboratory
Transportation Center
Winnett Student Center
Young Health Center
APPENDIX IV – ASBESTOS ABATEMENT CONTRACTORS

Due to the nature of asbestos abatement work, only California State Certified contractors can work at the Institute. This ensures that abatement contractors have all required training, licensing, and insurance to conduct asbestos abatement work. If a contractor does not have the required credentials or insurance they are not allowed to perform asbestos work on campus.

Contractors are responsible for any AQMD and CalOSHA notification.
APPENDIX V – DISPOSAL OF HAZARDOUS WASTE MATERIALS

Environment, Health, and Safety (EHS) is responsible for coordinating the proper disposal of hazardous waste.

EH&S should review the contractor hazardous waste procedures when disposing of asbestos containing materials before the waste materials leave the Campus.
TO: Caltech Community  
FROM: Environment, Health, and Safety Office  
DATE: September 12, 2013  
SUBJECT: Annual Asbestos Notification

Annual written notice of the presence of asbestos-containing building materials is being provided to all campus Faculty, Staff, and Students as required by California Health and Safety Code §25915.2. Copies of this legislation are available in the Environment, Health, and Safety Office (EH&S).

Prior to 1979 asbestos was used extensively in the building industry throughout the United States for thermal insulation, fireproofing, and in structural support materials. At Caltech, asbestos was used to insulate hot water and steam pipes as well as ventilation ducts. It may be found in some attics, mechanical rooms, and in some floor and ceiling tiles.

The mere presence of asbestos in a building does not necessarily mean that a health hazard exists. Asbestos-containing building materials are not a health threat unless asbestos fibers become airborne and are inhaled. In areas where the asbestos is bonded or encapsulated, such as floor tiles or painted and properly maintained insulation materials, there is little or no risk to health.

Accordingly, it is important not to disturb asbestos-containing materials. Caltech’s policy restricts work on asbestos-containing materials to properly trained and equipped personnel. Moving, drilling, cutting, or otherwise disturbing such materials can pose a health risk and should not be attempted by untrained personnel. Campus Faculty, Staff, and Students should immediately notify EH&S if they observe suspected asbestos-containing materials which are not properly maintained.

The Environment, Health, and Safety Office maintains records of asbestos sampling and air monitoring results performed during the course of asbestos abatement work. These records are available for review by appointment by contacting EH&S at extension 6727.
APPENDIX VII – REGULATORY REFERENCES

3. California Code of Regulations Title 8, § 5208 Asbestos.