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| Seismic Prevention |

**Office: Environmental Health and Safety**

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**Related Policy or Policies: Environmental Health and Safety Policy**

**Revision History**

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| **Revision Number:** | **Change:** | **Date:** |
| IR |  | 01/21/2018 |
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**A. Purpose**

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| To prevent injuries or damage from falling objects |

**B. Definitions**

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| See below |



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| **C. Procedures**  Chemicals, install wood or Plexiglas strips or wires to restrain containers on open shelves.   1. Attach a wood or Plexiglas strip 1/8” x 1” to the shelf with wood or sheet metal screws. No. 10 x 1".   OR  Attach wire rope to the shelf with wood or sheet metal screws. Wire rope—No. 12 gage  2. Secure the wire rope with three tight turns at each end.  3. Provide intermediate vertical strips where horizontal strips span more than 3'. Attach vertical  strips to each shelf.  4. Place horizontal restraint high enough to restrain tall objects while allowing easy access. Provide additional horizontal  restraint as required for shorter objects.  Mechanical Latches – Recommendations  Secure cabinet doors with mechanical latches.  1. Provide mechanical latches on all doors. Test latches to assure that they can remain closed during severe shaking.  2. Replace magnetic latches with mechanical latches.  Display Cases   1. Secure display case to floor. 2. Use angle bracket if needed. 3. Secure contents to shelves using hook-and-loop or similar devices. 4. Secure art objects or potted plants with ropes, chains or cables attached to eyebolts installed into wall studs or blocking. 5. Display case must have safety glass. 6. Shelves in display case must be secured.   Shelves Medium items (shelf Contents)  1. Add metal edge angles to shelving. Metal edge angle—1-1/2" x 1-1/2" x 10" gauge  2. Screw platform with wood screws at 18" on center. Small wood screws—No. 10 x 3/4" Shelves Large Items, net restraint use net restraints for items that are bulky or stored high.   1. Net restraints—nylon netting 2. Eye-hooks   Shelves Small Items   1. Zee clips OR Shelf lip 2. Bungee cord or wire 3. Velcro 4. Clear plastic or wood shelf lip 5. Nylon netting   Open Shelves or Table Tops   1. Use either hook and loop fasteners on the table and object, or non-damaging adhesives such as earthquake putty, clear quake gel, or microcrystalline wax to secure breakables in place. Chose products like Quake Hold™ or Museum Wax™ to secure your items.   Tall Furniture; bookcases, china hutches, and armoires   1. Secure the furniture item to the wall stud.  * Locate the wall studs using a stud finder * Secure each furniture piece to at least two wall studs, depending on size and weight, using: * Commercially available kits utilizing nylon strapping * Also recommended as an inexpensive option (but screws can cause damage to furniture such as an antique bookcase): * 4" L-brackets and * 3" lag screws, available at all hardware stores  1. Place heavy and/or large items on lower shelves to prevent them from flying around the room in an earthquake. 2. The ground swells and rolls of an earthquake can cause anything resting on shelf or counter tops to fall –see TVs, computers, and electronics to learn how to secure these items. For more delicate items like china, crystal or pottery – consult our page about objects on open shelves or table tops.     Wall Hangings (Wall-Mounted Objects Pictures and mirrors can also be secured at their corners with earthquake putty. Only soft art such as tapestries should be placed over beds or sofas.)   1. Use a stud finder to find the closest wall stud. Screw a screw hook into the wall stud so that there is barely enough room to slide the framing wire between the wall and the hook. This will help prevent the wire from jumping off the hook during the potentially violent movement of an earthquake. 2. If the artwork or mirror is large and / or heavy, you may want to consider securing it to two wall studs. Secure the bottom corners of these items with Quake-Hold-type products to keep them from banging against the wall. This helps keep the framing glass from breaking and damaging the artwork or photo.       Water Heater   1. There should be very little space between the water heater and the wall. If there is more than 1 or 2 inches, attach a wooden block to the wall studs with long lag screws. The purpose is to prevent the heater from tipping backwards. 2. Wrap the heavy-gauge metal strapping 1½ times around the tank. Start by placing the strapping at the back of the tank. Bring it to the front and then take it back to the wall. 3. Secure this strapping to the wall studs or the wood block using several 1/4" x 3" or longer lag screws with oversized washers. If you are securing it directly into concrete, use 1/4" expansion bolts in place of the screws. 4. Replace all copper and metal piping with flexible natural gas and water line connectors. |
| This procedure may be revised at any time without notice. All revisions supersede prior procedures and are effective immediately upon approval. |