

Summary of ANL-E Compliance Audit OSHA Findings
 OSHA Punchlist as of August 4, 2003

This document summarizes the July 8-17, 2003 OSHA Compliance Audit Findings for Argonne National Laboratory - East. The findings are organized by OSHA Regulation Subparts and lists all findings for each subpart.

Working Definitions –

Finding – A violation of an OSHA Standard, but has not been formally validated for defensibility. A hazard is present and there is an employee exposure.

General Duty – A specific OSHA Standard does not apply, however there is a consensus standard or generally recognized industry best practice.

Recommendation – The compliance officer identifies a potential hazard and is recommending the Lab consider addressing the potential hazard.

Number of Instances for Each Subpart

Subpart	Number of Instances
General Duty 5(a)(1)	94
Walking-Working Surfaces	67
Exit Routes, Emergency Plans, and Fire Prevention Plans	112
Occupational Health & Environmental Control	32
Hazardous Materials	112
Personal Protective Equipment	42
General Environmental Controls	32
Medical and First Aid	112
Fire Protection	111
Compressed Gas and Compressed Air Equipment	1
Materials Handling and Storage	31
Machinery & Machine Guarding	65
Hand & Portable Powered Tools and Other Hand Held Equipment	11
Welding, Cutting & Brazing	15
Electrical	313
Toxic and Hazardous Substances	229
Fall Protection (1926.502)	1
Total Instances	1380
Recommendations	145

Subpart D – Walking-Working Surfaces

Regulation	Description	Instances
1910.22	General Requirements	37
1910.23	Guarding floor and wall openings and holes	14
1910.24	Fixed industrial stairs	6
1910.25	Portable wood ladders	1
1910.27	Fixed ladders	8
1910.29	Manually propelled mobile ladder stands and scaffolds (towers)	1
		Total 67

Subpart E – Exit Routes, Emergency Plans, and Fire Prevention Plans

Regulation	Description	Instances
1910.36	Design and construction requirements for exit routes	74
1910.37	Maintenance, safeguards, and operational features for exit routes	37
1910.38	Emergency action plans	1
1910.39	Fire Prevention Plans	2
		Total 112

Subpart G – Occupational Health and Environmental Control

Regulation	Description	Instances
1910.95	Occupational noise exposure	32
		Total 32

Subpart H – Hazardous Materials

Regulation	Description	Instances
1910.101	Compressed gases (general requirements)	96
1910.102	Acetylene	1
1910.103	Hydrogen	3
1910.106	Flammable and combustible liquids	5
1910.110	Storage and handling of liquefied petroleum gases	4
1910.124	General requirements for dipping and coating operations	3
		Total 112

Subpart I – Personal Protective Equipment

Regulation	Description	Instances
1910.132	General Requirements	34
1910.133	Eye and face protection	1
1910.134	Respiratory Protection	5
1910.138	Hand protection	2
		Total 42

Subpart J – General Environmental Controls

Regulation	Description	Instances
1910.141	Sanitation	4
1910.145	Specifications for accident prevention signs and tags	2
1910.146	Permit required confined spaces	16
1910.147	The control of hazardous energy (lockout/tagout)	10
		Total 32

Subpart K – Medical and first aid

Regulation	Description	Instances
1910.151	Medical services and first aid	112
		Total 112

Subpart L – Fire Protection

Regulation	Description	Instances
1910.157	Portable fire extinguishers	110
1910.159	Automatic Sprinkler Systems	1
		Total 111

Subpart M – Compressed Gas and Compresses Air Equipment

Regulation	Description	Instances
1910.169	Air Receivers	1
		Total 1

Subpart N – Materials Handling and Storage

Regulation	Description	Instances
1910.176	Handling materials – general	2
1910.178	Powered industrial trucks	2
1910.179	Overhead and gantry cranes	25
1910.184	Slings	2
		Total 31

Subpart O – Machinery and Machine Guarding

Regulation	Description	Instances
1910.212	General requirements for all machines	32
1910.213	Woodworking machinery requirements	8
1910.215	Abrasive wheel machinery	6
1910.219	Mechanical power-transmission apparatus	19
		Total 65

Subpart P – Hand and Portable Powered Tools and Other Hand-Held Equipment

Regulation	Description	Instances
1910.242	Hand and portable powered tools and equipment, general	6
1910.243	Guarding of portable powered tools	5
		Total 11

Subpart Q – Welding, Cutting, and Brazing

Regulation	Description	Instances
1910.252	General Requirements	1
1910.253	Oxygen-fuel gas welding and cutting	10
1910.254	Arc welding and cutting	4
		Total 15

Subpart S – Electrical

Regulation	Description	Instances
1910.303	General requirements	124
1910.304	Wiring design and protection	35
1910.305	Wiring methods, components, and equipment for general use	89
1910.307	Hazardous (classified) locations	65
		Total 313

Subpart Z – Toxic and Hazardous Substances

Regulation	Description	Instances
1910.1001	Asbestos	76
1910.1003	13 carcinogens (4-Nitrobiphenyl, etc.)	10
1910.1018	Inorganic arsenic	3
1910.1020	Access to employee exposure and medical records	30
1910.1025	Lead	45
1910.1027	Cadmium	5
1910.1028	Benzene	11
1910.1030	Bloodborne pathogens	2
1910.1048	Formaldehyde	1
1910.1052	Methylene chloride	6
1910.1096	Ionizing radiation	5
1910.1200	Hazard communication	25
1910.1450	Occupational exposure to hazardous chemicals in laboratories	14
		Total 233

Finding Details –

Subpart D - Walking-Working Surfaces

General requirements

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.22(a)(1)	1	All places of employment, passageways, storerooms, and service rooms were not kept clean and orderly and in a sanitary condition, in that; the temporary building was in disarray, ceiling tiles were falling and water and mold concentrations existed on the floor.		Demolish the structure as planned.
1910.22(a)(1)	1	The work area was not kept free of excessive clutter, chemicals and equipment.	Housekeeping - excessive clutter, tubes, oil extracts, Dichlosomethane, No Synthesis, pre-purification, and	Follow ASNL-E protocols - clean areas of work routinely. Put chemicals in proper storage.
1910.22(a)(1)	1	Repair the roof leak and clean the debris falling from the ceiling onto the work station to ensure a clean and orderly condition	Roof leaks caused debris from the ceiling to fall on the work station - fix roof and clean work station.	Repair the leaking/torn roof membrane on the flat roof.
1910.22(a)(1)	1	The North end area at the workstation was not kept free of excessive clutter and dirt.	Housekeeping - north end at work station - coal area 30 sieves, excessive clutter and dirty. No one working in this area today - student area	Clean the area and place materials in storage.
1910.22(a)(1)	1	Housekeeping was poor in the linen closet storage area.		Clean up and organize the storage area.
1910.22(a)(1)	1	The storage area was not kept clean and orderly.		Clean the walking area.
1910.22(a)(1)	1	House keeping was poor throughout the service station.		Need to clean up the Service Station by providing storage space
1910.22(a)(1)	1	Storage room F033 had loose articles blocking the walkway with unstable storage of overhead parts and articles.		Clean up the area.
1910.22(a)(1)	1	The lab needs to be decontaminated. The lab has low-level contamination with Cd - 145 and Ca -45		Decontaminate the lab
1910.22(a)(1)	1	The storage room was not kept clean and orderly.		Clean up the area.
1910.22(a)(1)	1	The central island area of the laboratory was not kept clean and orderly.	The central island area of M-018 contained excessive clutter. The inspection party and laboratory supervisor agreed that the area needed a good cleaning to rid it of clutter and debris.	ANL-E policy requires that work areas be periodically cleaned. It is recommended that this area be physically cleaned and kept free of clutter.

1910.22(a)(1)	2	The A-150 laser laboratory was not kept clean and orderly, and in a sanitary condition in that the sink and ventilation hood contained excessive debris and materials.	The ventilation hood in A-150 had 13 plastic bottles, waste trichloroethylene, waste methanol, 2 HCl and HI cylinders. The sink area had 6 small cylinders, 1 5 gallon lime container, vacuum, Nalco 39, PVC steel plate, and various other items.	The lab is very dirty and requires cleaning.
1910.22(a)(1)	1	Copy Room E-108 had stored items on top of cabinets which created a hazard of objects falling onto persons	None	Remove objects from atop the cabinets.
1910.22(a)(1)	1	Storage room F037 had loose spare parts and articles stored in aisles and overhead.	None	Clean up the area.
1910.22(a)(1)	3	The A126 laser laboratory was not kept clean and orderly and in a sanitary condition in that old chemicals were stored in ventilation hoods #1 and #2, the water sink was dirty, and concrete blocks, lumber and other debris was not	Hoods #1 and #2 had legacy chemicals stored in them. Two concrete blocks and a 2" x 4" piece of lumber was not removed. Additionally, the water sink was very dirty with debris.	Conduct an thorough housekeeping/clean-up in A126.
1910.22(a)(1)	1	Storage room C056A had articles, extra parts and sheet metal blocking walkways.		Clean up the area.
1910.22(a)(1)	1	Housekeeping is poor in this lab.	Materials have been stored in this lab for an unknown time frame.	Provide a storage area for all materials not in use.
1910.22(a)(1)	1	The A-114 laboratory ventilation hood and the badly rusted water sink were not kept in a clean and sanitary	Hood 114-2 w/30 containers- Housekeeping is dirty and cluttered and in need of cleaning.	Remove the unessential chemical storage and clean out the hood.
1910.22(a)(1)	1	The Laser Laboratory A102 was not kept in a clean and orderly and in a sanitary condition. Excessive materials, chemicals, and miscellaneous items were stored in and under ventilation hoods #1211334 and #121335. The floor was very dirty especially in hood area #121335. There was excessive clutter and food in the refrigerator area.	None	Clean the laboratory and remove excessive stored materials.
1910.22(a)(1)	1	Stored materials such as boxes and other materials were stored in the walkway area.	None	Conduct good housekeeping by clearing out boxes, equipments and other materials that could create tripping hazards.
1910.22(a)(1)	1	Miscellaneous materials were stored on top of the flammable storage cabinet.	None	Remove storage items from the cabinet top. This item was immediately abated.
1910.22(a)(1)	1	Compressed gas cylinder gauges and other miscellaneous materials were stored atop the flammable chemical storage cabinets.	None	Remove storage items from the top of the cabinet. This item was immediately abated.
1910.22(a)(1)	1	Places of employment, passageways, storerooms and service rooms were not kept clean and orderly, in that; the Verizon Telephone storage area was in total disorder with articles of supplies and equipment extending into the aisles.	Verizon Telephone storage area was in total disorder with articles of supplies and equipment extending into	Clean the storage area up. Properly store all material.

1910.22(a)(1)	1	The escape tunnel floor was not kept clear and clean of stored materials.	None	Clear the tunnel and store materials out of the way of the walkway.
1910.22(a)(2)	1	The floor of the workroom was not maintained in a clean and, so far as possible, dry condition in that the floor near the technical power panel TP-R2 had Victaulic fluid intermixed with water on the floor.	N/A	Keep liquids from accumulating on the floor.
1910.22(a)(3)	1	Employees used a covering over a floor pit that was not even with the existing floor surface.	Towards the center of the laboratory floor there was an uneven floor surface. This surface was the cover over a pit. The area was approximately 5 ft x 8 ft in size. The existing covering was approximately 1- inch below the exiting floor level.	Repair or replace the cover so that it is even with the floor level.
1910.22(b)(1)	1	The water drain pipe routed across the walkway created a tripping hazard.	None	Install a bridge over the pipe.
1910.22(b)(1)	2	In Bay's 2 and 3 old hydraulic cylinders were not removed, allowing bolts to stick up and create a tripping hazard.	There were 8 bolts per cylinder.	Cut off the bolts or remove the cylinders.
1910.22(d)(1)	1	The loads approved by the building official were not marked on plates of approved design and posted in a conspicuous place, in that; the roof over the accelerator did not have the load limits posted.	Floor load limits not conspicuously posted. One piece of equipment shows a weight of 3800 pounds.	Calculate the load limits of the floor/roof and post the load limits placard.
1910.22(d)(1)	1	The mezzanine above the work area did not have the load rating legibly marked.	A rating was noted above the ladder leading to the above floor area but not at a point where material was typically loaded onto the mezzanine.	Stencil or paint the load rating on floor supports.
1910.22(d)(1)	1	The overhead storage area was not provided with a MAX floor rating		Calculate the load rating and post it at the entrance to the storage
1910.22(d)(1)	1	The upper loft used for storage was not marked with the approved floor loading.		Calculate and post the approved floor loading for the storage loft.
1910.22(e)	1	A cover over the 6 inch by 54 inch opening at the floor grate to the pit under the High Resolution Imaging machine was not installed.		Fabricate a cover for the opening.

Guarding floor and wall openings and holes

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.23(a)(5)	1	The trench opening was not protected on all sides by removable standard railings.	The trench is 8' deep and open at each end. One end has guard rails on 3 sides, but not on the fourth side. The fall is 4 to 8 feet onto plywood or the concrete floor of the trench. The fourth side is only guarded by a single awareness chain.	Guard all of the four sides of the trench opening with standard top and mid railings.

1910.23(a)(7)	1	A temporary floor opening did not have standard railings or was not constantly attended by someone. A Weil pump opening was not guarded. The opening was 6" in diameter.	None	Install a pump motor or a cover over the hole.
1910.23(a)(8)	1	The floor pit cover has a 3 foot by 2 inch gap which created a tripping hazard.	In the middle of the Lab a floor pit cover had a floor opening approximately 3 feet by 2 inches which creates a tripping hazard.	Replace/repair the pit cover to remove the tripping hazard.
1910.23(a)(8)	1	There was incomplete decking at the mid-level of the floor pit which had an opening of 2 feet by 6 feet exposing employees to a fall hazard of approximately 4 feet.	2 foot by 6 foot gap in decking exposes employees working in the floor pit to a fall hazard of approximately 4 feet.	Add additional decking to the mid-level platform.
1910.23(a)(9)	1	Employees used a cover over the pit which had a number of floor openings.	In the middle of the laboratory, floor openings and floor holes existed in the cover over the pit. Openings ranged in sizes: 27 x 1 1/2 inches; 2 1/2 x 10 inches; 1 1/2 x 10 inches; 10 x 3 inches; 9 X 2 inches; and 9 x 2 inches. Some of the openings existed by desks and chairs. In talking to the escort, the material used for the decking was similar to what was used for the laboratory	Replace or repair the cover over the pit.
1910.23(c)(1)	1	Open-sided floors or platforms 4 feet or more above adjacent floor or ground level were not guarded by a standard railing (or the equivalent as specified in paragraph (e)(3) of this section), in that the waste press had open areas that would permit an employee to fall up to 10 feet	The waste press had a light current that shut the press down when it was broken, protecting employees from the moving parts of the press. On the entrance side of the platform there was a 36 inch high area that did not have any form of fall protection and an employee could fall through the opening into the waste bin or possibly to the floor.	Install guard rails on the platform to protect the openings on the
1910.23(c)(1)	1	Open sided floors or platforms more than 4 feet or more above adjacent floor or ground levels were not guarded with a standard railing (or the equivalent) on all open sides and ends, in that; the guard rail was completely omitted on the platform directly above boiler #5, were the large wheel for the valve was located.	The opening in the guard rail at the large wheel for the steam valve was 15 inches on each side of the wheel. The employee would have to bend over the wheel and actually lean out over the edge of the walkway to turn the large wheel. A fall of up to 15 feet to the top of the boiler could occur.	Install a guard rail or the equivalent where the wheel is located.
1910.23(c)(1)	1	The platform was not provided with a gate or guard rail system at the opening.	The opening from the platform to fixed ladder was not guarded (8' fall to concrete floor).	Install a self-closing gate or guard rail system.
1910.23(c)(1)	1	Operators or maintenance personnel are exposed to a fall of approximately 30 feet from the cab of the crane to the floor below due to the open sides of the cab that are not equipped with guardrails.		Removal of the cab as discussed in form # 545, or the addition of guardrails if cab is approved by the manufacturer.
1910.23(d)(1)	1	The stairs leading from the dock to the ground level were not provided with handrails on both open sides.	Both sides of the stairway need handrails, but only one open side was provided with a handrail. The stairway was 5 steps with a 42" stair width.	Install handrails on both sides of the stairs.
1910.23(e)(1)	1	A standard guard rail 42 inches in height was not provided to guard the stairwell opening at the "D" Corridor location.	D Corridor with a 35 inch railing protecting the stairwell to the basement.	Add 7 inches of guardrail at the D Corridor location. The building

1910.23(e)(1)	1	The rail measured only 35 inches in height. A standard railing did not have a vertical height of 42 inches nominal from upper surface of top rail to floor, platform, runway, or ramp level. The wood railing at the load dock was 35" high.	None	was built in 1948. Since the overall height of the dock is less than 48", either remove the rail or construct a
1910.23(e)(1)	1	The guardrail on the catwalk at the mezzanine level was not 42 inches high. The top rail was measured at 35 5/8	None	Install/retrofit the guardrails with a top rail that is 42 inches high, plus or minus 3 inches. There are approximately 60 feet of guardrails.
1910.23(e)(1)	1	Standard railings did not consist of top rails that had a vertical height of 42 inches nominal from upper surface of top rail to floor, platform, runway, or ramp level, in that; the guard rail on the platform next to the pit had a top rail height of 36 inches.	Guard rail 36 inches high next to the trough area of the pit.	Install new guard rails that have a top rail of 42 inches high normal.

Fixed industrial stairs

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.24(c)	1	The stairway from the service floor to the main floor is deteriorated from water damage causing it to rust and causing the supporting cement to fail.	The deterioration is caused by a leak in the roof of the building which channels water to the stairwell.	Repair the leak in the roof. Replace/repair the stairway and support structure.
1910.24(e)	1	Fixed stairs were installed at angles to the horizontal that exceeded 50 degrees, in that; the ladder into the basement area of the operating building was steeper than 60 degrees.	Stairway ladder was like a ships ladder. The rise was 110 inches over a 66 inch run.	Install a stairway that does not exceed 50 degrees to the horizontal.
1910.24(e)	1	Fixed stairs were installed at angles to the horizontal that exceeded 50 degrees, in that; the ladder into the basement area of the operating building was steeper than 60 degrees.	Stairway that was like a ships ladder. 72 inch rise over 48 inches run.	Install a stairway that does not exceed 50 degrees to the horizontal
1910.24(f)	1	The lower stair tread leading into the absorber pit was deformed and not uniform with the other treads (tread was bent).	None	Replace the deformed tread.
1910.24(f)	1	Rise height and tread width of fixed industrial stairs was not uniform, in that; the four step stairway connecting rooms D-039 to D-040 was deteriorated causing the rise and run of the treads to change.	Deterorating stairway that had nosing raised up from the stairway changing the rise of the treads.	Repair the concrete and metal stairway.
1910.24(i)	1	The stairway in Building 211 at the "D" Corridor location from the first floor to the basement did not have a vertical clearance of 7 feet.	The stairway to the basement was 75" from the overhead beam to the stair-riser.	Rebuild the stairway.

Portable wood ladders

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.25(d)(1)(x)	1	A portable wooden ladder that had several defects was not withdrawn from service.	This is a four foot step ladder. It has dry rotted cracks. It was not tagged "Do Not Use" or removed from	Remove the ladder from service. Abated immediately.

Fixed ladders

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.27(b)(2)	1	Employees used a fixed ladder to access the pit that did not have the side rails extend above the floor level.	Access into the pit was by a fixed ladder. The side rails did not extend above the floor level. The pit was approximately 8' deep.	Extend the side rails of the fixed ladder above the floor level.
1910.27(b)(2)	1	Ladder side rails which might be used as a climbing aid were angle iron and did not afford an adequate gripping surface.	Side rails were angle iron and did not afford a good grip increasing the likelihood of falls. Note: Ladder was tagged out before audit.	Remove the ladder or replace with one that has adequate side rails.
1910.27(c)(4)	2	The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of two fixed ladders was not at least 7 inches. The clearance at the back of the fixed ladders in the two escape tunnels measured 5 3/4 and 6 3/4 inches.	None	Move the ladder to obtain a 7 inch clearance at the back of the ladder.
1910.27(c)(4)	1	The distance from the center line of the rung to the nearest permanent object in back of the ladder was less	A fixed ladder had 1-2 inches of clearance from the top several rungs to pipes and cable trays.	Relocate the ladder or reconfigure the ladder.
1910.27(c)(7)	1	The hatch cover over the ladder access to the roof did not provide a minimum of 24 inches of unobstructed clearance between the hatch cover and the center line of the ladder rungs.	Ladder led to roof with hatch opening to roof did not open to provide 24 Inches of clearance. Note: Ladder was tagged out before audit.	Remove the ladder or reconstruct the hatch cover so adequate clearance is provided.
1910.27(d)(1)(v)	1	Vertical bars on ladder cages were spaced greater than 9 1/2 inches apart, center to center.	Vertical bars on ladder cages were spaced at intervals of 16 inches center to center.	Redesign and install ladder cages so vertical bars have a maximum spacing of 40 degrees around the circumference of the cage with a maximum spacing of 9 1/2 inches.
1910.27(d)(1)(v)	1	Vertical bars of a ladder cage were spaced greater than 9 1/2 inches apart, center to center.	Vertical bars on a 26 foot high ladder cage were space at intervals of 23 inches apart.	Redesign and install ladder cages so vertical bars have a maximum spacing of 40 degrees around the circumference of the cage with a maximum spacing of 9 1/2 inches.

Manually propelled mobile ladder stands and scaffolds

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.29(a)(2)(ii)	1	A mobile ladder stand was not designed such as to ensure that the ladder stand would safely sustain the specified load in that the leg pads were missing from the four-step ladder stand, preventing it from locking in place to secure it against movement.		Replace the leg pads.

Subpart E – Exit Routes, Emergency Plans, and Fire Prevention Plans

Design and construction requirements for exit routes

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.36(b)(1)	1	The exit sign light was out	.	Replace bulbs in the xit sign.
1910.36(b)(1)	2	At least two exit routes were not available to permit prompt evacuation of employees and other building occupants during an emergency. The two tunnels leading to the fixed ladder hatchways were marked "Do Not Use" and thereby limited the escape route in the event of an emergency to only one route instead of two as required. The ladderways were marked "Do Not Use" because the clearance in the back of the ladder to the wall was less than 7 inches.	None	Move the ladder such that clearance is 7 inches. The hatch is 30 inches and would be acceptable for emergency escape.
1910.36(b)(1)	1	At least two exit routes were not available to permit prompt evacuation of employees during an emergency.	The penthouse and laboratory were not provided with a second means of egress.	Provide a second exit. In the interim, if the primary exit becomes unusable during an emergency, employees are instructed to evacuate to the roof where fire department will affect
1910.36(b)(2)	1	The exit was not clearly marked to read "Exit"	No exit sign	Install an exit sign.
1910.36(b)(2)	1	Exit were not clearly visible and marked by a sign reading "Exit."	No exit sign posted in G-221	Install a permanent "Exit" sign that complies with all
1910.36(b)(4)	1	Interior labs in the wing sections of Building 212 did not have the route to exits clearly indicated. The rooms have multiple doors to corridors.	All evacuation maps are located in the corridors. No signage in any labs for path of travel or evacuation	Mark the path of travel for all interior rooms with multiple doors. Post the evacuation plan in each room.
1910.36(b)(4)	20	Interior labs in the Wing section of Building 212 do not have the route to exits clearly indicated.	Evacuation maps do not specify routes from these rooms.	Review the Evacuation Plan and clearly identify routes from work areas, marking with appropriate signs.

1910.36(b)(4)	13	Interior labs in the wing section of Building 212 did not have the route to exits clearly indicated. These rooms have multiple doors to different corridors.	Evacuation maps do not specify routes from these rooms.	Review the Evacuation Plan, clearly identify routes from work areas and mark with appropriate
1910.36(b)(4)	25	Interior labs in the wing sections of Building 212 did not have the route to exits clearly indicated. These rooms have multiple doors to different corridors.	Evacuation maps do not specify routes from these rooms. No signage in those rooms to indicate path of	Review the Evacuation Plan and clearly identify the route from work areas and mark with appropriate signs.
1910.36(b)(5)	1	Every exit was not clearly visible in that the exit sign was blocked by structures.	N/A	Attach an exit sign placard t the door so that the exit door is visible from all points.
1910.36(d)(1)	1	The exit route door was not able to be opened from the inside of the room at all times. One of the double exit doors was difficult to open due to build-up of dirt on the	None	Clean the exit door side.
1910.36(d)(1)	1	The interlock switch on the doorway between A102 and A114 was not installed in a manner to allow A114 a secondary escape route in the event of an emergency.	The interlock switch was installed in such a manner that it would block egress from A114 in the event of an emergency.	Reposition the interlock switch so that the switch will not block the A114 door into A102.
1910.36(d)(1)	1	Every required exit and way of travel from the exit to the street was not continuously maintained free of obstructions or impediments to full instant use in case of fire or emergency. An engine lift was blocking an aisle and not free of obstruction in case of fire or emergency.		Move the engine lift that was blocking the exit.
1910.36(d)(1)	1	The exit door into the hallway was partially blocked by a desk and other materials; the exit was not maintained to provide free and unobstructed egress.		Move desk and other materials in order to provide free and unobstructed egress.
1910.36(g)(2)	1	An exit access of at least 28 inches in width was not maintained in the south end aisleway where four compressed gas cylinders were located. In the south end of D174, 4 cylinders blocked the aisle and reduced the width of the exit to 14".	None	Maintain 28 inches of access width to exit. Move/re-arrange compressed gas cylinders.
1910.36(g)(2)	1	An exit access of at least 28 inches in width was not maintained in the aisleway where the argon and hydrogen compressed gas cylinders were located. The aisleway between the argon and hydrogen compressed gas cylinders was 19 1/2 inches wide.	None	Move/relocate cylinders for an exit access of at least 28".
1910.36(g)(4)	1	The two cylinder trucks attached to the two 200 gallon cylinders were not kept clear of the exit route.	The two cylinder trucks attached to the two 200 gallon cylinder projected into the walking exit route.	Move the two cylinder trucks 90 degrees to clear the exit route.
1910.36(h)(3)	1	The outside "J & A" entrance concrete pad was damaged and not kept in a smooth, solid, and substantially level condition. There was a broken steel plate and a hole in the concrete pad at the door.	The outside walkway was damaged and not kept smooth, solid and substantial level.	Repair the concrete pad with a concrete patch and re-pour the damaged pad.

Means of egress, general

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.37(a)	2	An exit sign is needed over the door leading to the outside.	None	Install an exit sign over the door leading to the outside.
1910.37(a)(3)	1	Access to the exit door was blocked by pallets of material stored in front of the exit door.	None	Remove pallets to allow free access to exit.
1910.37(a)(3)	1	Means of egress was through another room that was capable of being locked.	Only means of egress through a lab with a laser. The room was locked during experiments.	Provide access by crash bar on door rather than lock. The iInterlock should shut down lthe aser.
1910.37(a)(3)	1	The door to the maintenance area was locked.		Remove the lock.
1910.37(a)(4)	1	Light bulbs in the emergency exit sign were burnt out.		Replace the light bulbs in the sign.
1910.37(a)(4)	1	Safeguards designed to protect employees during an emergency (exit door) were not kept in proper working order, in that; the handle on the southeast emergency exit door was broken.	Broken door handle.	Repair the door handle on the exit door.
1910.37(b)(1)	1	In the event of an emergency and the loss of power for the lighting the path to the exit would not be illuminated.		Install additional emergency lighting on the west end of corridor.
1910.37(b)(1)	1	An illuminated exit sign is required for this location.		Install an illuminated exit sign.
1910.37(b)(2)	1	Each exit was not clearly marked by a sign reading "Exit", in that; the door to the exterior was not marked with a sign.	The actual exit door from the NCC room did not have an exit sign installed.	Install an exit sign on the door.
1910.37(b)(2)	2	Each exit was not marked by a sign reading "Exit" in the generator room.		Install exit signs.
1910.37(b)(2)	1	Each exit or way to an exit, was not clearly marked by a sign reading "Exit", in that; the exit doors leaving the room had the plastic exit signs missing from the light cans.	The plastic EXIT sign was missing from the light can.	Install the plastic exit sign in the can and assure that the back light is operational.
1910.37(b)(2)	1	Each exit or way to an exit, was not clearly marked by a sign reading "Exit", in that; none of the doors leaving the room were marked as exits.	Two doors from room not marked as exits, or way to exit.	Install signs on each of the doors indicating which is an exit and the route to an exit.
1910.37(b)(4)	1	An overhead exit sign was facing the wrong way.	The DOE personnel use this area for storage. The second floor overhead exit sign was facing the wrong way and pointing to an area around a wall. It appears that the sign was bumped by furniture stored directly	Maintenance needs to secure the exit sign to face the appropriate way to egress.

Means of egress, general

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.37(b)(5)	1	A door that was neither an exit nor a way of exit access and which was so located or arranged as to be likely to be mistaken for an exit was not identified by a sign reading "not an Exit" or similar designation. The door to the chemistry lab did not have "Not an Exit" designated on the	None	Install a sign reading "Not an Exit"
1910.37(b)(5)	1	The exit door to the hallway needs to be marked "exit" or "not an exit."	None	Provide the appropriate marking on the door.
1910.37(b)(5)	1	Employees were subject to using a doorway that was not an exit.	The exit sign in the laboratory was missing letters as to indicate "not an exit." The "XI" remained from the previous sign. The auditor discussed the issue with the escort that the doorway is no longer an exit. The Lab will post the appropriate sign on the door indicating that it is "not an exit."	Place a sign on the door indicating that it is "not an exit".
1910.37(b)(5)	1	Employees were subjected to using a doorway that was not an exit.	An exit sign had been on the door at a previous time. Argonne needs to indicate that the door is not an exit. The escort mentioned that the door is not an exit and should be marked a such. The lab needs to assure that exit signs are posted and legible.	Install the appropriate sign on the door for egress.
1910.37(b)(5)	1	Each doorway or passage along an exit access that could be mistaken for an exit was not marked "Not an Exit" or similar designation, or identified by a sign indicating its actual use (e.g., closet), in that; the entrance to the HVAC room was not marked as to its actual use.	Door way to HVAC area not marked to show its actual nature and not marked as "Not An Exit"	Install signs which state the true nature of the doorway, or post a sign stating "Not An Exit"
1910.37(b)(5)	1	A doorway not constituting an exit or way to an exit was not clearly marked to minimize possible confusion with an	The door was locked, led to another room, and had an exit sign over the top.	The exit sign was removed during the visit.
1910.37(b)(5)	1	A "not an exit" sign is needed on the closet door.		Install a "Not an Exit" sign on the closet door.
1910.37(b)(5)	1	Each doorway or passage along an exit access that could be mistaken for an exit was not marked "Not an Exit" or similar designation, or identified by a sign indicating its actual use (e.g., closet), in that; the doorway into the hallway was not marked with a sign of any type.	Doorway into hallway of building not marked by a sign of any type.	Mark the door with an appropriate sign showing the actual character of the door.
1910.37(b)(5)	1	Each doorway or passage along an exit access that could be mistaken for an exit was not marked "Not an Exit" or similar designation, or identified by a sign indicating its actual use (e.g., closet), in that; the doorways into the vertical chemical storage tanks were not marked with a sign	The two doors into the room containing the vertical chemical storage tanks did not have any signs installed on the to show their actual character.	Mark the doors with appropriate signs showing the actual character of the door.

Means of egress, general

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.37(b)(6)	1	Emergency exit light above the door was malfunctioning.		Replace/repair the emergency exit sign.
1910.37(b)(7)	1	The emergency exit light on the west door is no operational.		Repair/Replace the emergency light.
1910.37(f)(2)	4	Employees using 5% fluorine gas as a lasing medium did not have access to a way of exit access door that swings with exit travel.	Sign on fluorine cylinder says "danger high hazard material". This area had a near miss several years ago and liberated fluorine gas into the room. The cylinder is enclosed in a special gas cabinet, but the laser chamber may not be leak proof in the room.	Change the door to swing out.
1910.37(k)(2)	1	Means of egress were not continuously maintained free of all obstructions or impediments to full and instant use, in that; the stairway from the upper storage area was completely blocked by material in storage.	Blocked Stairs	Remove the boxes and equipment that were stored in the access way at the stairway.
1910.37(q)(1)	1	A readily visible sign on the exit door to F-130 was not installed.	Exit door to Lab F-130 w/o exit/life safety door sign. Most signs throughout Bldg. 200 were in place.	Install an exit sign.
1910.37(q)(1)	1	An exit sign is needed on or over the door to A007 which leads into the corridor.		Install an exit sign.
1910.37(q)(1)	1	Two exit doors were not marked by a readily visible sign	two exit doors- no exit signs	Provide exit marking.
1910.37(q)(1)	1	A door used as an exit was not marked by a readily visible sign.	Door not marked as EXIT	Mfark the exit door.
1910.37(q)(1)	1	The two exit doors leading to adjoining labs were not marked with Exit/Life Safety Code Door signs.	2 N. wall doors leading to adjoining labs were not marked w/ Exit/Life Safety Code Door signs.	Attach the appropriate signs.
1910.37(q)(1)	1	The exit door into laboratory 126 from 142 was not marked by a readily visible sign.	The exit door into laboratory 126 from 142 had no exit sign.	Install an exit sign.

Employee emergency plans and fire protection plans

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.38(a)	1	Labs did not have evacuation routes posted in the rooms (working labs).	The building has multiple rooms that have access to more than one corridor. The Evacuation Plan did not specify the route of travel from work areas and was not posted in Rooms.	Review Emergency Plan and provide rooms with multiple egress possibility clearly marked routes of travel and assembly points.

Egress

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.39(c)(2)	1	Procedures were not adequate to control combustible waste materials (vegetation/weeds) next to the building.	Weeds 4' to 8' grow next to the building.	Mow the grass/weeds to the edge of the building.
1910.39(c)(2)	1	Procedures were not adequate to control combustible waste materials (vegetation/weeds) next to the building.	Six to eight foot high weeds grow right to the edge of the building. There is a cooling unit in the grass about ten feet from the building which represents a source of	Mow the grass/weeds to the edge of the building.

Subpart G - Occupational Health and Environmental Control

Occupational noise exposure

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.95	20	Review of the medical records of 20 employees who reported significant exposure to noise revealed that (1) no dosimetric studies were available to determine if employees were exposed above the TWA necessary for the hearing conservation program and (2) Names of individuals with threshold shifts were not found on the OSHA 200/300 logs.		Map work areas for noise levels to determine if individuals have significant noise exposure and (2) Provide annual audiograms, training and ppe to exposed individuals.
1910.95(d)(1)	1	Noise monitoring was not conducted where information indicated that an exposure may exceed an 8 hour time weighted average of 85 dba.	SLM reading 86-87 dba	Conduct monitoring and post time limits or conduct monitoring and provide hearing protection.
1910.95(g)(6)	5	Employees were not given annual audiograms.	The supervisor stated that employees are given audiograms every two years.	If employees are above 85dBA for an eight hour day, which is likely, give audiograms yearly for this group.
1910.95(g)(8)(ii)(A)	5	When a standard threshold shift (STS) occurred employees not using hearing protectors were not fitted with hearing protectors, trained in their use and care, and required to use them.	There was a lack of coordination between the medical department and the craft shop supervisors concerning enforcement of PPE wear after employee audiograms in standard threshold shift situations. Supervisors in the craft shop stated that the medical department did not advise them of which employees had experienced STS so that supervisors could enforce use of hearing protection required by 1910.95(i)(2)(B) and 1910.95(i)(5).	Have the medical department notify supervisors of employees who have STS so that supervisors can enforce the provisions of 1910.95(i)(2)(B) and .95(i)(5).
1910.95(l)(1)	1	The employer did not post a copy of the noise standard in the carpenter shop where high noise levels exist during multiple sawing and planing operations.	The carpenter shop has approximately ten to fifteen wood working saws, planers, etc. Noise warning signs regarding use of hearing protection are posted. Monitoring by Argonne indicates levels between 85dBA and 100dBA for individual saws during use.	Post a copy of 1910.95 in the workplace.

Subpart H - Hazardous Materials

Compressed gases

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.101(a)	1	Compressed gas cylinders were not inspected in accordance with Department of Transportation regulations or with the Compressed Gas Association Pamphlet C-6-1968, in that; cylinders were not hydrostatically tested within appropriate times.		Remove compressed gas cylinders from service until appropriate inspections and tests can be performed.
1910.101(a)	5	Compressed gas cylinders were not inspected in accordance with Department of Transportation regulations or with the Compressed Gas Association pamphlet C-6-1968. Cylinders were not hydrostatically tested within	The locations were B-030, Penthouse, and Loading Dock.	Perform required inspections and tests on cylinders.
1910.101(a)	22	Compressed gas cylinders were not inspected in accordance with Department of Transportation regulations or with the Compressed Gas Association Pamphlet C-6-1968, in that; cylinders were not hydrostatically tested within appropriate times.	22 cylinders, mixture of oxygen, argon and helium	Remove the cylinders from service until appropriate inspections and test can be performed.
1910.101(a)	2	Compressed gas cylinders were not inspected in accordance with Department of Transportation regulations or with the Compressed Gas Association Pamphlet C-6-1968, in that; cylinders were not hydrostatically tested within appropriate times. 2 argon cylinders last inspected in 8/89 and 7/96.	None	Remove the cylinders from service until appropriate inspections are performed.
1910.101(a)	4	All compressed gas cylinders in service or in storage in the cylinder storage area were not secured to prevent falling.		Secure the cylinders per CGA-P-1 3.7.4.1
1910.101(a)	1	The acetylene cylinder was badly rusted and in need of re-conditioning and re-painting.	None	Send the cylinder to supplier for re-conditioning.
1910.101(a)	40	Compressed gas cylinders were not inspected in accordance with Department of Transportation regulations or with the Compressed Gas Association Pamphlet C-6-1968, in that; cylinders containing Sulfur Hexafluoride, Helium, Nitrogen Oxide, Sulfur Dioxide, Nitrogen, Argon and compressed air, manufactured before December 31, 1995 had not been tested and there was extreme corrosion on the bottoms of some of the cylinders.	Cylinders containing Sulphur Hexafluoride, Helium, Nitrogen Oxide, Sulfur Dioxide, Nitrogen, Argon and compresses air, manufactured before December 31, 1995 had not been tested.	Rebuild the racking system and perform the inspections and testing on the cylinders
1910.101(a)	1	The compressed gas cylinder containing 160 liters of nitrogen was badly rusted and in need of re-conditioning and re-painting. The CryoFab 160 liter nitrogen cylinder was extremely rusted ad the seam as well as in other locations. Reference , CGA P-1 Appendix A #1.	None	Refurbish the cylinders.

Compressed gases

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.101(b)	2	The in-plant handling of compressed gas cylinders was not in accordance with Compressed Gas Association Pamphlet P-1-1965. The argon cylinder was not adequately secured to prevent falling (CGA-P-1 3.7.4.1). The oxygen cylinder was stored next to a cylinder of isobutane (flammable gas) (CGA-G-4 1987-4.1.3).	None	Reconfigure the storage area to prevent cylinders from falling. Move the oxygen cylinder storage area at least 20 feet away from flammable gases.
1910.101(b)	1	The in-plant handling, storage, and utilization of all compressed gases in cylinders was not in accordance with Compressed Gas Association Pamphlet P-1 1991 in that a methane gas cylinder stored in "D" corridor did not have a valve protection cap.	None	Find the valve cap and ensure that it is installed.
1910.101(b)	1	The in-plant handling, storage, and utilization of all compressed gases in cylinders was not in accordance with Compressed Gas Association Pamphlet P-1 1991 in that a methane gas cylinder stored in "D" corridor was not secured. Compressed gas cylinder storage (3) with a methane cylinder was not adequately secured. A loose plastic wrap was not holding the cylinder securely.	None	Secure cylinder with more than a loose plastic wire.
1910.101(b)	1	Employees used a nitrogen cylinder by running the tubing across the aisleway in the laboratory.	Nitrogen gas cylinder tubing running across the floor. The tubing was exposed to physical hazards. Tubing from other compressed gas cylinders was run overhead, and not in the aisleway. The researcher disconnected the tubing from the cylinder (taken out of service).	Reroute the tubing to overhead.
1910.101(b)	2	Three compressed gas cylinders were not secured.	Compressed gas cylinders were not secured under the lab hood. One hydrogen chloride Cylinder and two Xenon cylinders were not secured.	Secure the cylinders.
1910.101(b)	1	Compressed gas cylinders, portable tanks, and cargo tanks did not have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S-1.1-1963 and 1965 addenda and S-1.2-1963, which is incorporated by reference, in that the regulator was on the nitrogen cylinder and the cylinder was not in use.	According to CGA-P-1 1991 (3.4.1) valve caps need to be on compressed gas cylinders except when containers are secured and connected to dispensing equipment.	Remove regulator and install cap.
1910.101(b)	1	The oxygen and hydrogen piping was not tagged "Not in Service" in accordance with the requirements of Compressed Gas Association Pamphlet P-1-1965 as referenced by this standard.		Tag the piping "Not in Service."
1910.101(b)	1	The handling and storage of compressed gas cylinders was not in accordance with Compressed Gas Association Pamphlet P-1-1964 CGA-G-4-1987 (4.1.2). An oxygen	None	Move the oxygen cylinder at least 20 feet away from the flammable liquids storage cabinet, or separate

		cylinder was stored within 7 feet of the flammable liquid storage cabinet.		by a partition with the appropriate fire resistance rating.
1910.101(b)	1	A compressed gas cylinder of 3.7% fluorine was not adequately secured to its storage rack. A high cylinder strap was used for a short cylinder potentially allowing the cylinder to slip out. Reference CGA-P-1 3.7.4.1	None	Secure the cylinder to prevent it from falling.
1910.101(b)	1	Compressed gas cylinders, portable tanks, and cargo tanks did not have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S-1.1-1963 and 1965 addenda and S-1.2-1963, which is incorporated by reference, in that the regulator was on the nitrogen cylinder and the cylinder was not in use.	According to CGA-P-1 1991 (3.4.1) valve caps need to be on compressed gas cylinders except when containers are secured and connected to dispensing equipment.	Remove the regulator and install a cap.
1910.101(b)	1	A gas cylinder was not properly secured.	Tank was on a cart (approx. 1 month) and not secured.	Secure the tank.
1910.101(b)	5	Compressed gas cylinders in rooms A-110, BE-108, BE-112. were not tested in accordance with Department of Transportation regulations. Appropriate hydrostatic testing of tanks was not performed within the applicable	A-110 - N2, BE-108 - Compressed air - 3 cylinders.	Have the supplier remove the tanks and perform the testing.
1910.101(c)	2	Compressed gas cylinders were not inspected in accordance with Department of Transportation regulations or with the Compressed Gas Association Pamphlet C-6-1968, in that; cylinders were not hydrostatically tested within appropriate times.	2 nitrogen cylinders, 5/92 and 8/94	Remove compressed gas cylinders from service until appropriate inspections and test can be performed.

Acetylene

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.102(a)	1	An acetylene tank is connected to an instrument that has not been used for an extended period.		Disconnect the tank and the regulator and store the tank in an appropriate location

Hydrogen

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.103(b)(2)(ii)(c)	1	Hydrogen tanks in storage were within 25 feet of a wall opening (door) and within 25 feet of oxygen storage and 10 feet of flammable gas storage.	None	Move the hydrogen tanks to a different location.
1910.103(b)(2)(ii)(d)	1	Hydrogen was stored within 20 feet of oxidizing gases, within 25 feet of ordinary electrical, and within 50 feet of other flammable gas storage.	None	Reconfigure the 4-wheel drive dyno cell cylinder rack to provide hydrogen to the High Bay.

Hydrogen

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.103(c)(3)(iii)(d)	1	Sources of ignition were present in areas where hydrogen cylinders were changed out, in that; wrenches were not non sparking metal.	The "No Spark" wrenches available are alloy wrenches which reduce the likely hood of a spark.	Use a "No Spark" wrench (the sparks produced are low temperature sparks, which reduces the likely hood of igniting gasses, especially hydrogen)

Flammable and combustible liquids

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.106(d)(3)(ii)(A)	1	The flammable liquid storage cabinet's handle is broken.	The standard says that the door shall be provided with a 3 point lock; with a broken handle the lock does not have three points.	Repair the handle.
1910.106(d)(7)(i)	1	There was no fire extinguisher or other means of fire protection near a flammable liquid storage cabinet.		Add fire extinguisher.
1910.106(e)(2)(ii)(b)(2)	1	Quantities of class II and III liquids were not stored in an inside storage room or storage cabinet.	The materials consisted of five 5 gallon containers of mechanical pump oil.	Remove the excess oil or provide a storage cabinet.

Storage and handling of liquified petroleum gases

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.110(b)(10)(x)	2	Each container safety relief valve used with systems covered by paragraphs (d), (e), (g), and (h) of section 1910.110, except as provided in paragraph (e)(3)(iii) of 1910.110 was not plainly and permanently marked with the following: "Container Type" of the pressure vessel on which the valve is designed to be installed; the pressure in p.s.i.g. at which the valve is set to discharge; the actual rate of discharge of the valve in cubic feet per minute of air at 60 deg. F. and 14.7 p.s.i.a.; and the manufacturer's name and catalog number	Relief valves on the vessels were of a type that did not extend much above the surface of the vessel.	Provide the information required by the standard.

Storage and handling of liquified petroleum gases

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.110(b)(6)(vi)	1	Readily ignitable material, such as weeds and long dry grass, was not removed from within 10 feet of LP gas storage tanks, in that; long weeds and grass had grown to a height of approximately one foot and was completely surrounding the LP tank.	Grass and weeds growing up around the LP tank for the emergency generator.	Completely clear the area around LP tanks of any grass and weeds for a distance of 10 feet. Use gravel or pavement to control the growth of weeds and grass around
1910.110(b)(6)(vi)	1	Readily ignitable material such as weeds and long dry grass was not removed from within 10 feet of LP gas storage tanks, in that; the long weeds and grass had grown to a height of approximately two (2) feet and completely surrounded the two large LP gas tanks.	The grass and weeds around the LP tank were at least 2 feet high. The weeds and grass apparently were not cut at any time during this growing season.	Completely clear the area around the tanks for up to 10 feet from the tanks. Use a herbicide to kill the grass and weeds. Put rocks or other material in the area around the tanks to help control the growth of the weeds.

General requirements for dipping and coating processes

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.124(g)(1)	1	A locker or other storage space was not provided to prevent contamination of the employee's street clothing where the chemical in use is an irritant.	Dip tank may not be in use but is still available for use.	Provide a locker or other storage space for employees street clothing.
1910.124(g)(2)	1	An emergency shower and eye-wash station close to the dipping or coating operation was not provided near the dip tank.	Dip tank may not be in use but is still available for use.	Install a safety shower and eye wash near the dip tank.
1910.124(h)	1	A physician's approval was not obtained before an employee with a sore, burn, or other skin lesion that requires medical treatment works in a vapor area.		Evaluate every employee before permitting them to work in a vapor area. If the employee has a sore, burn, or other skin lesion, have them evaluated by a doctor.

Subpart I - Personal Protective Equipment

General requirements

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.132(a)	9	Five laser glasses and four safety glasses were lying on the table and not securely/properly stored to protect against scratches and dirt.		Store all PPE eyewear (laser glasses, shields, safety glasses) in protective containers. Situation abated.
1910.132(a)	1	A personal protective full-face shield was not stored in a protective container to ensure a sanitary and reliable condition.	Full-face shield damaged/etched. Lab worker agreed that personal protective equipment should be better cared for and protected so that contamination would not be on a shield when the person places it in the hood.	Put the face shield in a protective container

1910.132(a)	2	Employees working in the service station shop were not wearing eye protection.	Two employees were not wearing eye protection.	Purchase and require the use of eye protection.
1910.132(a)	1	A full face shield was not stored properly to ensure a sanitary and reliable condition.	The full-face shield was badly scratched from chemical exposure and not suitable for wearing. This shield was not useable.	Provide more PPE containers and enforce the use of containers to keep eye and face PPE usable.
1910.132(a)	1	A personal protective full face shield was not stored in a manner to ensure sanitary and reliable condition. A full face shield was stored on oxygen cylinders.	None	Store the full face shield in a container.
1910.132(a)	1	Personal protective laser safety glasses were not stored in protective containers to ensure sanitary and reliable	Laser glasses in A-150 were not stored in protective containers.	Store PPE eyewear in protective containers as recommended by manufacturer.
1910.132(a)	1	A pair of personal protective eye goggles was full of dirt and chemicals and not kept clean and sanitary.	Goggles full of dirt and chemicals.	Goggles, as well as all eye personal protective equipment, must be kept in more protective containers than currently is the practice.
1910.132(a)	8	PPE (laser glasses) were not stored in a manner that would protect them from damage or dirty conditions. The eight laser personal protective eye glasses were hanging from hooks adjacent to the passageway and not placed in protective covers or boxes.	None	Place PPE (laser eye protection) in boxes/covers to protect them.
1910.132(a)	1	PPE (full-face shield) was not stored in a manner that would protect them from damage or dirty conditions.	The personal protective full-face shield located on top of the flammable storage cabinet was not stored in a protective container to ensure a sanitary and reliable condition.	Store all PPE eye protection in protective containers to ensure integrity. The situation was
1910.132(a)	2	Personal protective laser glasses and a full face shield were not stored in protective containers to ensure a sanitary and reliable condition.	Laser PPE eyewear was stored on a table not in a protective case. The full-face shield was stored on a compressed gas cylinder.	Store all PPE eyewear in protective containers to ensure integrity. The face-shield was
1910.132(c)	1	Defective personal protective equipment was provided in that a face shield in place at the acid dissolution hood was		The face shield was disposed of but must be replaced.
1910.132(d)(1)	4	A hazard assessment of the 4 fan lofts was not conducted where building structures created a potential for head	The loft had numerous locations where metal structures projected downward with a clearance of 6'2" from the floor surface - head injuries from striking the structures a good possibility.	Make the area a "bump cap" or "hard hat" area.
1910.132(d)(1)	1	The employer did not assess the workplace to identify hazards requiring the use of personal protective equipment in that several sprinkler heads and the pipe supports were at heights below 80 inches.	Supports for sprinkler piping were measured to be 79 inches and 78.5 inches. Sprinkler baskets were measured at 75 inches, 75 inches and 76 inches.	Perform a hazard assessment.

1910.132(d)(1)(i)	1	Personal protective equipment was not selected and used that would protect employees from exposure to hazardous chemicals, in that; employees did not use appropriate gloves when using Corrshield NT4200.	Employees were using nitrile gloves, should have used neoprene	Use neoprene gloves.
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Eye and face protection

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.133(a)(1)	1	Employees transferring chromic acid were not wearing chemical splash goggles.		Use chemical splash goggles when handling corrosive chemicals.

Respiratory protection

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.134(c)(1)	1	Employer has not designated a respirator administrator to over see the respirator program	Parts of program is administrated by various persons, users, supervisors, and IH's	Designate a program administrator to over see the complete program
1910.134(c)(3)	1	There was no qualified program administrator qualified to oversee the respiratory protection program and conduct the required evaluations of program effectiveness.	Lists of authorized PPE users with type of respirator to be worn were available, but no program administrator had been identified (no one knew who the program administrator was).	Provide division representatives the name of the respirator program administrator for the shops.
1910.134(h)(2)(i)	2	Respirators stored in a radiation controlled area were not stored to protect from contamination.	None	Remove respirators from the room and store in an area free from potential contamination.
1910.134(h)(2)(i)	1	A respirator was laying on a table where it could become contaminated.		Store the respirator in a one gallon plastic bag.

Hand protection

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.138(a)	1	Personal protective equipment was not selected and used that would protect employees from exposure to hazardous chemicals, in that; employees were not using appropriate gloves when using EPOX Resin 828, which contains Epichlorohydrin and Bis-Phenol A.	Gloves used: Latex (natural rubber) nitrile or vinyl. Bis-Phenol A is a suspect Terarogen (MSDS). Epichlorohydrin is an IARC group 2A Probable Human Carcinogen.	Use Butyl gloves.
1910.138(a)	1	The employer did not select and require employees to wear appropriate hand protection when employees were required to use a hazardous chemical (Eagle One Etching Mag Cleaner). Employees were using nitrile gloves when they should have used butyl.	None	Use butyl gloves.

Subpart J - General Environmental Controls

Sanitation

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.141(a)(3)(i)	1	All places of employment were not kept clean to the extent that the nature of the work allowed.	Materials have been stored in this lab for an unknown time.	Provide a storage area set up for all unused materials.
1910.141(a)(3)(ii)	1	The floor of every workroom was not maintained, so far as practicable, in a dry condition. The dock area was completely covered with water. Water came in under the door during heavy rain.	None	Repair the door seal to prevent water from traveling under the
1910.141(g)(4)	2	Food was stored in the laboratory. Two food containers were in the lab.	These assumed to contain food as that's how they are labeled. There is another food container that contains an unknown chemical cited separately.	Prohibit the storage of food in the laboratory.

Specifications for accident prevention signs and tags

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.145(c)(2)	1	A caution sign was not placed on the door entrance are ato warn of potential hazards of the area under construction.	The lab was under construction, and no sign indicating "Under Construction" was posted.	Install a sign to warn employees and others that the area was under construction. Item was abated.
1910.145(c)(3)	1	A sign in B-186 indicated lthat asers were in the room. The sign was not correct and was misleading. A new sign indicating no lasers in B186 was recommended.		A proper sign was installed immediately.

Permit required confined spaces

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.146(c)(1)	2	The employer did not evaluate the 4 foot deep containment pits around the alum tanks in the chemical storage room to determine if any of the pits are permit-required confined spaces	The alum vessels were evaluated and determined to be permit required spaces	Evaluate the pit areas.

1910.146(c)(1)	1	The employer did not evaluate the equipment to determine if space was a permit-required confined space.	The HVAC met the definition of being a confined space. Additionally, it had a physical hazard which met the definition of a permit-required confined space. The space had a placard indicating not to enter without locking out. Locking out would result in the space being downgraded to a non-permit required confined space.	Treat the space as a permit-required confined space until the equipment is locked out. Then follow the procedures for non-permit required confined spaces.
1910.146(c)(1)	1	Permit-required confined spaces were not marked with danger signs, warning employees of the hazards of the confined space, in that; the basement of the building was not marked as a permit required confined space.	The employer's representatives did not agree with CSHO's classification of the basement as a confined space. The space is not intended for continuous human occupancy. The access to the basement is via a fixed	Post a confined space warning sign at the entrance to the basement.
1910.146(c)(1)	1	Permit-required confined spaces were not marked with danger signs, warning employees of the hazards of the confined space, in that; the storm water retention pit (manhole) did not have a sign posted on it.		Post a warning sign on the confined space (manhole).
1910.146(c)(2)	1	Permit required confined spaces were not marked by signs, in that; HVAC ductwork had not been placarded as permit-required confined spaces.	The large HVAC ducts in the basement of the building was not marked as confined spaces. The duct work had openings large enough for a man to enter while standing up. The auditor was told that they had never considered the ductwork as confined space because there wasn't a potential for an atmospheric hazard. He was also told that there were large fans in the ducts and that they have to enter the ducts in order to replace the belts on the fans. The ductwork was label as air supply for rooms D131A, D130, D124	Install signs setting out that the ductwork is a confined space. Train all employees that HVAC ductwork is a confined space. Train all employees to follow the confined space program when entering the ductwork.
1910.146(c)(2)	1	The employer did not inform employees of the danger posed by the permit-required confined space by placard.	The PRCS had no placard or sign indicating that the space was a permit-required confined space.	Apply a sign that reads "Danger - Permit-Required Confined Space - Do Not Enter"
1910.146(c)(2)	1	Access doors to the air handlers and duct work were not posted as confined spaces.		Post the doors leading to the air handlers and duct work as confined spaces.
1910.146(c)(2)	1	The cooling tower pit had a space reading confined space #xxxx instead of "Danger --- Permit-Required Confined Space, Do Not Enter"	None	Replace present signs with required language.
1910.146(c)(2)	1	Permit required confined spaces were not marked by signs, in that; the retainment pits around the vertical chemical storage tanks did not have warning signs posted.	The manager of the area was very argumentative in the classification of the pit as a permit required space. He did not agree with CSHO's determination that the pits were permit required spaces.	Install warning signs at the pit. Instruct all employees that the pit is a permit required confined space.

1910.146(c)(2)	1	A sign reading "Danger - Permit Required Confined Space, Do Not Enter" or similar language was not posted on the manhole on the outside, west side of the building.	The manhole on the west side, outside of building 129 did not have a sign posted warning of the confined space. It was alleged that a confined space sign was actually posted on the inside of the lid. This was not	The situation was abated on the spot by installing a sign on the doorway into the manhole.
1910.146(c)(2)	1	A confined space below floor level, which employees are scheduled to enter during the week of July 14th 2003, has not been correctly evaluated as a confined and permit-required confined space.	The lab supervisor says employees will enter this trench next week (July 14) to install gas piping connections. The trench is 8 feet deep. The trench has an access ladder with insufficient clearance due to a metal plate in the opening below the floor level. Floor opening drops of four to eight feet exist in the open area. One side of the opening was guarded by a single slack chain. The supervisor believes this will not constitute a confined space entry because of the short duration of work in the trench.	Post the trench as a confined space. Utilize permit procedures when employees enter to install gas piping connections to cryogenic equipment in the trench.
1910.146(c)(2)	1	Permit required confined spaces were not marked by signs, in that, the basement area of building 549A, which had limited access, did not have a warning sign posted.	The basement of the switchgear house was not designed for continuous human occupancy. The only access to the basement area was by a vertical fixed ladder. The basement consisted of poured concrete walls without windows. Continuous forced air ventilation.	Post a sign on the confined space. Follow all of the requirements in 1910.146(c)(5) if an alternative entry procedure is used.
1910.146(c)(4)	1	Review of the written confined space entry program revealed that the program elements required by the following sections of the standard were not addressed; 1910.146(c)(5), (c)(5)(ii), (c)(5)(ii)(C), (c)(5)(ii)(E)(3), (c)(5)(ii)(F), (d)(14), (d)(3)(ii), (d)(5)(iv), (d)(5)(v), (d)(5)(vi), (e)(5), (h), (i), (k)(3).		Rewrite the permit-required confined space entry program to include the elements noted as missing the the hazard description, along with other required elements.
1910.146(c)(7)	1	A collection basin designated as a permit required confined space by the employer was improperly reclassified as "non-permit required" in that the potential for a hazardous atmosphere was not considered when it was reclassified.	The employees are required to enter the space weekly to determine whether hazardous waste has leaked into the collection area. The employees, using a variance granted by the safety office enter the space without any atmospheric testing and without following any entry procedures. See attached memo "Reclassification of Collection Basins - Building 303" dated 8 January 1999.	1) Re-evaluate the space. It may not be a permit required confined space since there is a stairway which allows employees to walk in and out of the space. 2) Initiate proper confined space entry procedures. 3) Cancel the memo dated 8 January 1999 titled "Reclassification of Collection Basin - Building 303.
1910.146(d)(3)	1	The employers procedures for entry into permit-required confined spaces are inaccurate, in that; the written boiler shut down procedures for boilers 1 thru 4 refer to gas valve id tags that do not exist.	Specifically, steam plant manual volume 2B, Chapter 11, Procedure 11.4 describes the locations of 4 gas valves that must be shut in order to shut down the boiler prior to entry. The valve tags associated with these valves are missing or illegible.	Provide adequate, legible tags on each of the 4 gas valves on each of the four boilers.

The control of hazardous energy (lockout/tagout)

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.147(c)(4)(i)	1	Energy control procedures were not utilized for the control of potentially hazardous energy when the employee was engaged in activities covered by this section or standard.	The multi lith offset press had interlocked guard raised while the press rollers were removed for cleaning. No lockout/tagout was used to safeguard the servicing employee.	Either lockout press during periods when service or maintenance occur or as long as the attachment plug is under the exclusive control of the employee, unplug the press during service periods.
1910.147(c)(4)(i)	1	Lockout procedures were not developed, documented and utilized for the control of potentially hazardous energy when employees were engaged in activities covered by the lockout/tagout standard, in that; specific lockout/tagout procedures had not been developed on equipment which must be locked out.	The generic lockout/tagout program did not address specific procedures that were required to lockout and make safe equipment.	Develop, document and train employees on specific lockout procedures for equipment subject to lockout conditions.
1910.147(c)(4)(ii)	1	Specific procedures were not used to lock and tag out equipment such as, but not limited to, 480 volt motors, process pumps, and ventilation fans.	The practice of not using specific procedures is pervasive throughout the lab maintenance complex. The power house foreman admitted that job safety analysis were being developed to address some of the specific procedure requirements of the OSHA standard. The guide, Mr. Carbo, stated that specific maintenance lockout and tagout procedures were not used anywhere in	Procedures should be developed for each maintenance task prior to implementation.
1910.147(c)(4)(ii)	1	There were no specific procedures for shutting down and isolating deaerator DA-2 from hazardous energy.	DA-2 serves coal boiler #5. The employer admitted that there were no specific written procedures for shutting down the deaerator and isolating it.	The employer should continue conducting the job safety analysis program and include deaerator DA-2 in the analysis. The employer should write a specific procedure for shutting down and isolating deaerator DA-2 from hazardous energy.
1910.147(c)(4)(ii)	1	There were no specific procedure for shutting down and isolating deaerator DA-1 from hazardous energy.	DA-1 serves boilers 1 thru 4. The employer admitted that there were no specific written procedures for shutting down the deaerator and isolating it.	The employer should continue conducting the job safety analysis program and include deaerator DA-1 in the analysis. The employer should write a specific procedure for shutting down and isolating deaerator DA-1 from hazardous energy.

1910.147(c)(5)(ii)	5	Lockout devices were not the only devices used for controlling energy. Personal lockout devices (red locks) are used along with out-of-service locks (blue locks) to take equipment out of service for extended periods of time. One lockout device had been in place since 1999. This interchangeable locking method could dilute the importance of the personal lockout programs purpose. (Five personal locking devices were used to lockout for extended periods.)	None	Re-evaluate the lockout program to limit lockout conditions to reasonable time periods. Use out-of-service locks for taking equipment off-line for long periods. Increase supervision for
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Subpart K - Medical and First Aid

Medical services and first aid

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.151(c)	1	Appropriate eyewash facilities were not provided where corrosive chemicals were present.	Have hand held eyewash , not hands free. Dynasolve FS 8220 (pH 11.0)	Add an yewash to the area or change the cleaner to a non-corrosive type.
1910.151(c)	2	Suitable eyewash facilities were not provided where corrosive chemicals are used.	Employees use spray bottles of Spitfire, pH of 12.	Use alternate cleaner or provide eyewashes.
1910.151(c)	1	Suitable facilities for quick flushing of the eyes were not provided where employees were exposed to injurious corrosive materials.	The eyewash was not "hands free". Employees who had a corrosive chemical exposure to the eyes would be unable to hold both eyelids open for flushing.	Replace the eyewash with a "hands free" type.
1910.151(c)	1	Employees used injurious corrosive chemicals where there was no eye wash within the work area.	Employees use chemicals including but not limited to mineral spirits where there was no eye wash in the	Install an eye wash.
1910.151(c)	1	Suitable facilities for quick drenching of the eyes and body were not provided. The safety shower was not well marked. Reference , ANSI Z358.1-1990	The shower head was recessed in the ceiling, and activation is through an unmarked pull chain. In the A-wing, which is undergoing renovation, locations for showers are being marked with a large green X on the floor.	Label the shower with a distinct sign.
1910.151(c)	2	Where the eyes of any person were exposed to injurious corrosive material, suitable facilities for the quick drenching of the eyes were not provided; Two floor scrubbers were in the process of having their batteries charged and had no eye washing facility in the immediate		Provide an eye wash in room W101 or move battery charging to an area where an eye wash is immediately available.
1910.151(c)	1	No eye wash was available where employees use corrosive chemicals	Employees use corrosive AciKlean and no eyewash in area	Relocate the corrosive chemical mixing area to a location where an eyewash is available.
1910.151(c)	2	Portable fire extinguishers were not mounted, located and identified so that they are readily accessible to employees without subjecting the employees to possible injury, in that, there were two fire extinguishers that were blocked by		Move the waste baskets from in front of the fire extinguishers.

waste baskets.

1910.151(c)	1	Eyewashes and safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity.	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).
1910.151(c)	1	The eyewash located in CMT Lab E-110 was not inspected annually to ensure proper operation	Eyewash last inspected 12/11/01	Ensure that the eyewash is placed on the inspection SOP.
1910.151(c)	4	Eyewashes and safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).
1910.151(c)	2	Eyewashes and safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).
1910.151(c)	1	Boxes were blocking the fire extinguisher so that it was not readily accessible to employees.	None	Remove boxes.
1910.151(c)	1	Eyewashes and safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).
1910.151(c)	1	Eyewashes and safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).
1910.151(c)	10	Eyewashes and safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).
1910.151(c)	1	Bleach tanks are gauged by employees at least once a year. The closest eye wash and shower is located through a door	Access to the closest eyewash and shower is not immediate because of door	Install a portable or permanent eye wash and shower in the room.

		on the outside of the room.		
1910.151(c)	1	The emergency shower located in CMT Lab E-116 was not inspected annually to ensure proper operation.	Overhead emergency shower last inspected 12/11/01.	Ensure that the emergency shower is placed on the inspection SOP.
1910.151(c)	1	No eyewash was available where employees use corrosive chemicals.	Employees use corrosive floor stripper in janitorial closet and no eyewash available.	Remove the corrosive to an area where an eyewash is installed.
1910.151(c)	6	In labs A-110, A-130, B-115, B-138, C-114, QA-103 suitable eyewash facilities were not provided where corrosive chemicals are used.		Replace the chemicals with non-corrosive ones where possible or provide eyewashes as required.
1910.151(c)	1	A fire extinguisher was not readily accessible. A chair was located in front of the fire extinguisher.	NOne	Maintain clear access to portable fire extinguishers.
1910.151(c)	60	Approximately 40 eyewashes and 20 safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity.	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).
1910.151(c)	10	Eyewashes and safety showers are not maintained in accordance with manufacturer's recommendations. Eyewashes are not checked annually for flow rates and mechanical integrity. Safety showers are not activated weekly and are not checked annually for flow rates and mechanical integrity.	Maintenance section of Encon product information specifically references ANSIZ358.1-1990 for eyewashes and ANSI Z358.1-1998 for safety showers.	Follow ANSI Z358.1 per manufacturer's procedures (1990 version for eyewashes and 1998 version for safety showers).

Subpart L - Fire Protection

Portable fire extinguishers

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.157(c)(1)	1	The fire extinguishers located in this room did not have a method of identification showing where the extinguishers were located.		Install a sign above the fire extinguisher to identify its
1910.157(c)(1)	10	The portable fire extinguishers were not labeled so as to be readily accessible.	Many of the fire extinguishers had labels. APS committed to attaching these labels for those fire extinguishers that did not have labels and were not readily visible (e.g., not in a hallway). For example, Column 73 did not have label indicating fire	Attach the labels near the fire extinguishers so they can easily be seen all around the area of the fire extinguisher.
1910.157(c)(1)	10	The portable fire extinguishers were not labeled so as to be readily accessed when needed.	Many of the fire extinguishers had labels. APS committed to attaching these labels for those fire extinguishers that did not have labels and were not readily visible (e.g., not in a hallway).	Attach the label near the fire extinguisher that can easily be seen by all around the area of the fire extinguisher.
1910.157(c)(1)	1	Portable fire extinguishers were not readily accessible to		Remove the material from in front

		employees without subjecting the employees to possible injury, in that; the carbon dioxide extinguisher on the north wall of the building was blocked by electrical equipment that was in storage.		of the fire extinguishers. Instruct all employees to keep the access way to fire extinguishers clear and unobstructed.
1910.157(c)(1)	5	The portable fire extinguishers were not labeled so as to be readily accessed when needed.	Many fire extinguishers had labels. APS committed to attaching these labels for those fire extinguishers that did not have labels and were not readily visible (e.g., not in a hallway).	Attach the labels near the portable fire extinguishers so they can be seen by all the area.
1910.157(c)(1)	1	Fire extinguishers located in G-119 did not have a method of identification showing where the fire extinguishers was located.	None	Install a fire extinguisher sign above the unit to identify exact location.
1910.157(c)(1)	1	A fire extinguisher located in D-15 did not have a method of identification showing where it was located.		Install a proper sign above the fire extinguisher.
1910.157(c)(1)	6	Portable fire extinguishers were not mounted.	N/A	Mount the fire extinguishers.
1910.157(c)(1)	1	The fire extinguisher located in CL 212 did not have a method of identification showing where it was located.		Install a proper identification sign above the fire extinguisher.
1910.157(c)(1)	6	Portable fire extinguishers were not mounted.	N/A	Mount the fire extinguishers.
1910.157(c)(1)	15	The portable fire extinguishers were not labeled so as to be readily accessed when needed.	Many fire extinguishers had labels. APS committed to attaching these labels for those fire extinguishers that did not have labels and were not readily visible (e.g., not in a hallway)	Attach the label near the fire extinguisher so it can be seen easily by all that are around the area.
1910.157(c)(1)	6	Portable fire extinguishers were not mounted.	N/A	Mount the fire extinguishers.
1910.157(c)(1)	5	Numerous fire extinguishers throughout the facility were mounted but not identified.	Many other buildings at this facility have their fire extinguishers mounted and identified	Place identifying markers above each fire extinguisher.
1910.157(c)(1)	1	A fire extinguisher did not have a method of identification showing where it was located.	None	Install a fire extinguisher sign above the unit to identify its exact
1910.157(c)(1)	6	Portable fire extinguishers were not mounted.	N/A	Mount fire extinguishers.
1910.157(c)(1)	1	The employer did not provide a portable fire extinguisher that was readily accessible to employees. The provided extinguisher was blocked by some other equipment.		Remove items from in front of the fire extinguisher.
1910.157(c)(1)	1	A fire extinguisher located in DM-110 did not have a method of identification showing where it was located.	None	Install a proper sign for identification purposes.
1910.157(c)(1)	6	Portable fire extinguishers were not mounted.	N/A	Mount fire extinguishers.
1910.157(c)(1)	1	The fire extinguisher located in DL -237 did not have a method of identification showing where it was located.	None	Install a fire extinguisher sign above the unit to identify its exact
1910.157(c)(1)	6	Portable fire extinguishers were not mounted.	N/A	Mount fire extinguishers.
1910.157(c)(1)	6	Portable fire extinguishers were not mounted.	N/A	Mount fire extinguishers.

1910.157(c)(1)	1	The employer did not provide portable fire extinguishers and did not mount, locate and identify them so that they were readily accessible to employees without subjecting the employees to possible injury.	Fire extinguishers were not identified with a sign so that they were readily accessible to employees.	Install a "sign" above the fire extinguisher to identify its location.
1910.157(c)(1)	1	A fire extinguisher located in DM-110 did not have a method of identification showing where the fire extinguishers were located.	None	Install a fire extinguisher sign above the unit to identify its exact location.
1910.157(c)(1)	5	Portable fire extinguishers were not mounted, located and identified so that they are readily accessible to employees without subjecting the employees to possible injury, in that, there were no signs or red wall markings to indicate the locations of extinguishers located in Rooms G174, G275, G260, 234, and D15 corridor next to 127.		Install fire extinguisher signs that locate the fire extinguisher for employees.
1910.157(c)(2)	1	Portable fire extinguishers that were not approved for a specific application were available for use, in that; a class "D" fire extinguisher (Metal Fires) was available for use in an area where there was no possibility of a metal fire.	Class 'D' fire extinguisher available for use in an area where there was no possibility of a metal fire. An ABC fire extinguisher was also available for use.	Remove the class 'D' fire extinguisher from the lab.
1910.157(c)(4)	1	FA fire extinguisher was removed from its mounting bracket and located several feet away. The fire extinguisher was not being kept in its designated place.		Relocate the fire extinguisher to the designated location.
1910.157(d)(1)	1	A water filled fire extinguisher was located in a room with electrical equipment.		Install the correct extinguisher for electrical fires.
1910.157(d)(1)	1	Portable fire extinguishers were not selected and distributed based on the classes of anticipated workplace fires and on the size and degree of hazard which would affect their use, in that; a class 'A' fire extinguisher was provided in an area where the major fire potential was electric switching gear.	Class 'A' fire extinguisher provided next to electrical switching gear.	Replace the class 'A' extinguisher with a class 'C' fire extinguisher.
1910.157(d)(2)	1	Portable fire extinguishers for use by employees were not distributed so that the travel distance for employees to any extinguisher is less than 75 feet, in that; the generator room did not have a fire extinguisher installed.		Install a portable fire extinguisher in the room for employees use.
1910.157(d)(2)	1	The employer did not distribute portable fire extinguishers for use by employees so that the travel distance for employees to any extinguisher is 75 feet or less.	Only one fire extinguisher for room measuring approximately 140 feet by 40 feet.	Install additional portable fire extinguishers.
1910.157(e)	1	The fire extinguisher located on the truck had not been inspected on regular intervals.	The facility has instituted a procedure whereby all fire extinguishers are labeled with a bar code and inspection data is maintained via scans. This extinguisher did not have a bar code.	Inspect fire extinguishers and input the data on a computerized system.

Automatic sprinkler systems

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.159(c)(10)	1	The sprinkler head placements have not been evaluated as the work areas have evolved over the years.	None	Evaluate the sprinkler systems to ensure that the discharge pattern is adequate for the current configuration of the work area.

Subpart M - Compressed Gas and Compressed Air Equipment

Air receivers

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.169(b)(3)	1	Air receivers were not equipped with one or more spring-loaded safety relief valves, in that; the air receiver located in the ID Booster Fan Room did not have a safety relief valve of any type installed.		Install a spring-loaded safety relief valve on the air receiver to prevent the receiver from being over pressurized.

Subpart N - Materials Handling and Storage

Handling materials - general

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.176(b)	1	Storage of two large cardboard tubes created an overhead hazard as the materials were not secured from falling.	Two large cardboard tubes were hanging from the ceiling and not secured from falling at any moment.	Remove the tubes to safeguard against their falling and striking someone.
1910.176(c)	1	Storage areas were not kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. A drum containing sodium was stored where it could come into contact with water. Water would react with sodium causing a possible fire/explosion hazard.	None	Remove the drum containing sodium to an area where water could not come into contact with the sodium.

Powered industrial trucks

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.178(q)(7)	1	Industrial trucks were not examined before being placed in service.	Hyster #214 was not inspected prior to being used.	Implement a daily inspection program and fill out the appropriate checklist.
1910.178(q)(7)	1	Industrial trucks were not examined before being placed in service. Hyster #38 (contractor forklift) had no record of daily inspection.		Implement a daily inspection program and fill out and retain the appropriate checklist.

Overhead and gantry cranes

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.179(b)(3)	1	The crane was modified in that the operators cab was moved to the inside of the bridge structure between the bridge beams and between the main hoist and the auxiliary		Remove the cab from the crane and use only the pendant controls or get the manufacturers written approval for the modification.
1910.179(c)(2)	1	Bridge sweeps were missing from the bridge and trolley.		Install sweeps that are no more than 3/8 inches above the tracks.
1910.179(c)(2)	1	Employees accessing the bridge crane are exposed to a fall of approximately 30 feet to the concrete floor and equipment below.		Modify the access platform to protect employees from a fall with additional platform material and handrails.
1910.179(d)(3)	1	Handrails and guardrails on cranes were not in compliance with section 1910.23 of this part, in that; the guard rail around an opening in the footwalk did not have a mid-rail.	The overhead crane had a walk-way with an opening presumably for passing equipment/people through. There is a chain which covers the opening but only at the top rail height. There is no chain for the mid-rail.	Install the mid-rail on the guard rail.
1910.179(d)(3)	1	Employees were exposed to a fall in excess of 16 feet in that crane access platform had an open side.	Fall of 16 Feet to concrete floor Zenar Crane; 15 Ton; 5 Ton ; Double block	Install a crane rail system.
1910.179(d)(4)(iii)	1	The access ladder to the overhead crane was damaged in that 4 rungs had been cut off so that the 20 foot rule would not take effect.	Fall in access of 20 feet to concrete floor.	Replace missing rungs and install safety climbing device or cage.
1910.179(e)(4)	1	The cranes inspected throughout the facility were not equipped with properly adjusted (3/8' above the rail) rail sweeps on the bridges and trolley. The Argonne escorts assured us that all the cranes were not equipped with rail sweeps. Most cranes were installed in the 1960's. The 1943 ANSI Standard which was in effect at the time of installation, also required the rail sweeps.		Ensure that all cranes at Argonne are equipped with properly adjusted rail sweeps.
1910.179(e)(4)	1	The crane bridge and trolley were not equipped with rail sweeps adjusted to within 3/8" of the top of the rail.		Adjust the fenders of the bridge to within 3/8" of the top of the rail. Equip trolleys with rail sweeps adjusted to within 3/8" of the top of the rail.
1910.179(e)(4)	1	The 50 ton Conco crane was not equipped with rail sweeps on the bridge or trolley adjusted to within 3/8" of the top of the rails.		Equip the bridge and trolley with properly adjusted rail sweeps.

1910.179(e)(4)	1	The bridge and trolley were not equipped with rail sweeps that were adjusted to within 3/8" of the top of the rail.	The crane was equipped with rail fenders that were not adjusted to the 3/8" above the rail.	Adjust the rail fenders to within 3/8" of the top of the rail.
1910.179(e)(4)	1	Bridge sweeps were missing on the bridge and trolley.		Install sweeps that are no more than 3/8 inches above the track.
1910.179(f)(4)(vii)	1	The bridge brakes are adjusted to allow excessive drift of the bridge.	The employer has loosened the bridge brake to allow more drift than is allowed by the OSHA Standard.	Set the brakes to within the limits established by OSHA Standards.
1910.179(g)(2)(i)	1	Electrical equipment was located or enclosed such that potential live parts were not exposed to accidental contact. A 35-ton overhead crane had electrical parts (connectors to runway conductors) within 2 feet of the cab access ladder. Note:		Guard the runway cab contacts to prevent employee exposure. Although runway conductors were covered with electrical tape, installation of guarding similar to that on the crane in Building #370 is recommended.
1910.179(g)(5)(iii)	1	The overhead crane was not provided a disconnect on the bridge.	ANSI reference disconnects.	Install disconnect on bridge
1910.179(g)(5)(iii)	1	The disconnects on the bridges from the runway conductors to the leads were not equipped with a non-conductive rope to allow disconnection of energy to the leads.		Use non-conductive ropes or other methods allowed by 1910.179(g)(5)(iii) to provide a disconnecting means from the conductors to the leads that is accessible from the floor.
1910.179(g)(5)(iii)	1	The overhead crane was not provided with a disconnect on the bridge.	Reference OSHA and ANSI standards.	Install a disconnect on the bridge.
1910.179(g)(5)(iii)(a)	1	The disconnect on the bridge from the runway conductors to the leads was not equipped with a non-conductive rope to allow disconnection of energy to the leads.		Use a non-conductive rope or other method allowed by 1910.179(g)(5)(iii) to allow disconnection of energy from the floor.
1910.179(g)(5)(iii)(a)	1	The disconnect on the bridge from the runway conductors to the leads was not equipped with a non-conductive rope to allow disconnection of energy to the leads.		Use a non-conductive rope or other method allowed by 1910.179(g)(5)(iii) to access disconnect from the floor.
1910.179(g)(5)(iii)(a)	1	The disconnect on the bridge from the runway conductors to the leads was not equipped with a non-conductive rope to allow disconnection of energy to the leads.		Use a non-conductive rope or other method allowed by 1910.179(g)(5)(iii) to provide a disconnect between the runway conductors and the leads that is accessible from the floor.
1910.179(g)(5)(iii)(a)	2	A non-conductive disconnect rope from the runway to the leads was not provided on the 50 Ton & 5 Ton Cranes.		Install leads from connectors on runway to floor lead so crane can

be locked out properly.

1910.179(j)(2)	1	Employees are not doing frequent inspections of cranes above the floor level due to not having access to the bridge crane at this location and throughout the facility.		Improve access to the crane so that employees are able to access the bridge and trolley for inspections. Do required repairs to access ladders that are tagged 'Do
1910.179(j)(3)	1	The 2 ton hoist inspection is not current.		Have the crane contractor inspect the hoist.
1910.179(j)(3)(iii)	1	The sheave on the hoist block was worn beyond the allowable specifications of the manufacturer.	Calipers and sheave gauges were used. The rope measured 5/8". The sheaves measured 3/4".	Replace the worn sheaves with new sheaves appropriate for the wire rope size.
1910.179(j)(3)(iii)	1	Three of the six sheaves on the hoist block were worn beyond the allowable specifications per manufacturers	Measurements were taken with calipers and sheave gauges. The rope was 9/16", three of the sheaves (two center and one outside) measured 5/8".	Replace worn sheaves with the size appropriate for the wire rope.

Slings

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.184(e)(3)(ii)	1	Eight steel alloy chains had no records of inspection for the last several years	Steel alloy chains which were available for use were not inspected nor documented.	Set up an inspection program for steel alloy chains.
1910.184(h)(5)(iii)	1	One lay of a manila rope sling was broken and the sling had not been removed from service.		Remove the sling from service or destroy it.

Subpart O - Machinery and Machine Guarding

General requirements for all machines

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.212(a)(1)	1	The S-axis side of the laser does not have an interlock on the shutter to prevent accidental exposure to the source.		Interlock the shutter.
1910.212(a)(1)	1	The heat sealer has no guarding to protect employees from nip-points. Note: Machine had already been tagged out in order for installation of guards.		Install guards.
1910.212(a)(1)	1	Machine guarding was not provided to protect the operator and other employees in the machine area from the hazards of rotating parts. The BAUM Folder, serial # EL2-010, suction feed area had a rotating wheel and shaft which were unguarded.		Provide a fixed barrier guard or an interlocked guarding device over the top of the suction feed area.
1910.212(a)(1)	1	The Lars Lande revolving sample extractor machine was not enclosed in a cover to protect from hazards created by	The Lars Lande of Whitmore Lake, Michigan, 10 sample revolving sample extractor measuring 68"x12"	Install a guard.

1910.212(a)(1)	1	rotating parts. The bench-top autoclave does not have an interlock to prevent employees from opening the autoclave while it is in operation.	was not guarded by an enclosure.	Add an interlock or remove autoclave from service.
1910.212(a)(1)	1	Machine guarding was not provided and used to protect operators from hazards created by machinery in that the unused portion of the horizontal band saw blade was not covered or guarded.	The unused portion of the horizontal band saw blade was not guarded or enclosed.	Install a guard over the unused portion of the bandsaw blade.
1910.212(a)(1)	1	No guarding was provided to protect the operator and other employees in the machine area from hazards such as flying chips. The clausing vertical lathe had a guard that was not being used. In place of the guard, employees were relying on face shields.		Use a face shield and the chip guard that was provided.
1910.212(a)(1)	1	Employees were exposed to ingoing nip points on the rolling mill used to thin metal for targets. The opening is 5" x 6" and 2" to the ingoing nip point (rolls).		Install guards or pedals with reverse built in.
1910.212(a)(1)	1	One or more methods of machine guarding was not provided to protect employees from rotating the machinery. A rotating extractor on the floor level of a lab walkway was not located in a safe place to prevent	None	Move the extractor to a safe location to prevent employee contact or guard the extractor.
1910.212(a)(1)	1	The unused portion of horizontal band saw was not guarded.	The guard had been installed, but had broken lose and did not function to guard the unused portion of the blade.	Reattach the uard so it will prevent contact with unused portion of

General requirements for all machines

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.212(a)(2)	1	The sharp edge on the "rough pump" guard is an accident hazard	The guard on the rough pump was made by a shop onsite. It is crudely built and has a sharp edge and the belt is not completely enclosed.	Fabricate or purchase a new guard that complies with the above regulation.
1910.212(a)(3)(ii)	1	The Wellsaw horizontal bandsaw was not provided a guard for the unused portion of its blade.	None	Provide an adjustable guard that will guard the unused portion of the blade.
1910.212(a)(3)(ii)	1	The centrifuge lid was not interlocked exposing employees to moving parts.	Centrifuges were open without stopping the centrifuge.	Install an interlock to prevent employee access before centrifuge stops or replace with centrifuge equipped interlock.
1910.212(a)(3)(ii)	1	The point of operation of machines whose operation exposed an employee to injury was not guarded, in that; the lid to the centrifuge was not interlocked and the lid could be opened while the centrifuge was in used.	Small centrifuge, approx. 1 foot in diameter	Replace the interlock with one that works. If the interlock can not be repaired then replace the centrifuge with a new one with an interlock on the lid.

1910.212(a)(3)(ii)	1	The point of operation of the dry ice grinder was not adequately guarded. The opening is 7" x 7" x 7" deep.		Install a proper point of operation guard.
1910.212(a)(3)(ii)	1	The point of operation on the Wiley Mill was not adequately guarded. The mill was tagged out of service. It is used to grind wood chips and crush soil samples.		Adequately guard the point of operation.
1910.212(a)(3)(ii)	1	The point of operation of machine whose operation exposes an employee to injury was not guarded. The stock at 1/2" is cut with a vertical band saw, and the guard only reaches down to about 3" above the table. The equipment was a DoAll Contour machine.	None	Install a guard to cover all points of operation.
1910.212(a)(3)(ii)	1	The unused portion of a blade was not guarded.	Equipment was a DoAll horizontal band saw (ANL#25-252). The existing guard was bent inward exposing the blade. The damaged area was approximately 5" in	The equipment can be repaired in-house by removing the barrier guard and straightening out that portion of the guard.
1910.212(a)(3)(ii)	1	The point of operation of the Wellsaw was not guarded.	The Wellsaw was not provided with a guard for the unused portion of the blade. Approximately 6" of the blade was exposed.	Install a blade guard.
1910.212(a)(3)(ii)	3	The centrifuge lids were not interlocked, exposing employees to moving parts.	The centrifuge lid was not interlocked exposing employees to moving parts. There are 2 large centrifuges and one small (1' diameter).	Install interlocks or replace centrifuges with equipment with appropriate interlocks.
1910.212(a)(3)(ii)	1	The guard on the Mossner Rekord Machine (a vertical band saw) lowers to only three inches above the table. While cutting 1/2 inch stock, 2.5 inches of the blade was exposed.		Install a guard to cover all the points of operation that are
1910.212(a)(4)	1	Revolving drums, barrels, and containers were not guarded by an enclosure which was interlocked with the drive mechanism, so that the barrel, drum, or container could not revolve unless the guard enclosure was in place, in that; the revolving containers of the centrifuge door were not interlocked so that when the door was opened the centrifuge would auto stop.		Remove the centrifuge from service until an interlock can be installed on the door
1910.212(a)(4)	1	Revolving drums, barrels, and containers were not guarded by an enclosure which was interlocked with the drive mechanism, so that the barrel, drum, or container could not revolve unless the guard enclosure is in place. The Girtton washing unit was marked by a sign that read "THE DOOR AND EMERGENCY STOP INTERLOCK MALFUNCTIONED AND HAVE BEEN OVERRIDDEN" and specific instructions on how to operate the unit followed the warning.	Interlock on door malfunctioned and was overridden so that the machine could still be used.	Immediately remove the Girtton washing unit from service. Lock the unit out with a lock and instruct all employees not to attempt to use the washing unit.

1910.212(a)(5)	1	Fan blades less than 7 feet above the floor were not guarded with guards that had openings no larger than one-half (1/2) inch, in that; the exhaust fan in the back wall of the bathroom that was six feet above the floor level had the fabric screen missing from the inner portion of the fan	Exhaust Fan, 6 feet above the floor, fabric guard removed from the inner portion of the shroud.	Install a guard on the fan that has openings less than one-half (1/2) inch.
1910.212(b)	1	Equipment was not safely anchored; (a) The Central Machine Bench Grinder, Serial Number 063872, was not mounted to the bench. (b) The South Bend drill press was not mounted to the floor.		Anchor the equipment.
1910.212(b)	1	Machines designed for a fixed location were not securely anchored to prevent walking or moving, in that; the pedestal drill press was not anchored to the floor.		Anchor the base of the drill press to the floor so that it will not walk when in use.
1910.212(b)	1	The Delta drill press, Inventory Number 802, was not secured to the floor.		Anchor the drill press to the floor.
1910.212(b)	1	A machine designed for a fixed location was not securely anchored to prevent its movement in that a metal cabinet housing a UV light source was not secured and could be easily knocked over.	The cabinet had been a horizontal bookshelf but was turned vertically to perform its new function. Its high center of gravity created a potential toppling risk.	Anchor the cabinet to the lab bench.
1910.212(h)(3)	1	The saw blade of the Black & Decker radial arm saw travels beyond edge of table.	A Black & Decker saw on a DeWalt frame was used to cut wood stocked in the shop.	Install a forward travel stop.
1910.212(h)(4)	1	The Black and Decker radial saw does not return to starting position when released.	The Black & Decker saw on the DeWalt frame used to cut wood in the shop.	Adjust the arm and table to provide a slight incline to facilitate saw return.

Woodworking machinery requirements

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.213(a)(4)	3	Centrifuges were not interlocked with the drive mechanism to prevent opening the centrifuge while it was still rotating.		Install an interlock or replace the centrifuges.
1910.213(b)(3)	1	There was no provision to prevent machines from automatically restarting after a power failure. The bandsaw used for metal and wood was not equipped with anti-restart device.		Install an anti-restart device.
1910.213(b)(3)	1	A tablesaw did not have an anti-restart device.		The site representative abated the violation by cutting off the plug. If the saw is used in the future, an anti-restart device needs to be

1910.213(h)(1)	1	Blade guards on radial arm saws did not remain in contact with the stock being cut, in that; the blade guard on the Black and Decker radial arm saw rides up and over the fence, exposing the blade.	Black and Decker Radial arm saw	Install a new guard on the saw that complies with the requirements. Cut a slot through the fence so that the guard will pass through the fence without raising up.
1910.213(i)(1)	1	The employer did not enclose or guard all portions of the blade except the working portion.	The Crob vertical band saw had portions of the unused portion of the blade (above and below table) that were not fully guarded.	Ensure the guard above the table is able to be adjusted to the top of the piece being sawed. Additionally, enclose the blade under the table.
1910.213(i)(1)	1	All portions of the bandsaw blade were not enclosed or guarded except for the working portion of the blade.	The bandsaw was equipped with a fixed guard which could not be adjusted to its various sizes of stock (i.e., wood, mild steel, aluminum).	Provide an adjustable guard.

Abrasive wheel machinery

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.215(a)(2)	1	Safety guards for off hand grinders did not cover the spindle end, nut, and flange projections, in that; the six (6) inch table top grinder did not have any form of guards installed on the higher side of the grinder.	It was alleged by management that the grinder belonged to an individual who had brought it in to give to another employee. There were no stones on the grinder.	Abated on the spot by cutting the plug off of the power cord and throwing the grinder into the trash bin.
1910.215(b)(12)	1	Abrasive wheel machinery guards did not meet the design specifications of the American National Standard Safety Code for the Use, Care, and Protection of Abrasive Wheels, ANSI B7.1-1970, which is incorporated by reference as specified in Sec. 1910.6, in that; a plastic material shield was put in the place where the tongue guard was once located and the plastic shield would not help retain a fractured grinding stone.	The tongue guard was missing from the off hand grinder. A plastic shield had been fashioned and had been placed where the tongue guard had once been located. The plastic tongue guard would not stop flying pieces of the grinding stone.	Replace the plastic tongue guard with a metal guard that will help restrain a fractured stone.
1910.215(b)(9)	1	The distance between the abrasive wheel and the adjustable tongue guard of the Baldor Abrasive Wheel was in excess of 1/4 inch.	None	Adjust the tongue to within 1/4 inch.
1910.215(b)(9)	1	The distance between the wheel periphery and the adjustable tongue or the end of the peripheral member at the top exceed one-fourth inch, in that; the opening at the tongue guard on the Black and Decker Grinder was one and one-eighth inches(1 1/8 inches).	Black and Decker Grinder was one and one-eighth inch (1 1/8 inch).	Adjust the tongue guard on the grinder so that the opening is one-fourth inch or less.
1910.215(b)(9)	1	The distance between the grinding wheel periphery and the adjustable tongue guard was greater than 1/4 inch.		Adjust the tongue guard to less than 1/4 inch for grinder wheels.

Abrasive wheel machinery

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.215(d)(1)	1	Abrasive wheels were not inspected or grounded by the user to make sure the wheel was not damaged. The Baldor Abrasive Wheel was not ring tested prior to mounting a new wheel.	None	Conduct a ring test. Tap wheel gently with a light non-metallic implement, such as the handle screwdriver for light wheels. If the sound cracked (dead), the wheel should not be used.

Mechanical power-transmission apparatus

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.219 (d)(1)	1	The ATS Furnace Oven did not have a guard protecting the in-running belt and pulley nip points.	The equipment is an ATS (Applied Test Systems) furnace oven, Series 3210. The belt and pulleys are not	Install a guard on the belt and pulleys that totally encloses nip points.
1910.219 (e)(3)(i)	1	The inclined belt on the ATS (Applied Test Systems) furnace oven did not have a guard.	None	Install a guard on the machine that encloses the belt and pulleys.
1910.219(c)(2)(i)	1	Exposed parts of horizontal shafting seven (7) feet or less from floor or working platform were not protected by a stationary casing enclosing shafting completely or by a trough enclosing sides and top or sides and bottom of shafting. A rotating shaft was not guarded. The rotating shaft was within 6 inches of the operator's station.	None	Enclose the rotating shaft.
1910.219(c)(2)(i)	1	The revolving shaft and coupler extending two inches from the air handler were not guarded against accidental contact.		Provide a guard which covers the shaft.
1910.219(d)(1)	1	A pressure reactor apparatus for hydrogenation did not have a guard over the pulleys and v-belt drive.	Unit not used but not tagged and locked out.	Lock the unit out until the appropriate guard can be added.
1910.219(d)(1)	2	Belts and pulleys were exposed on the exhaust fans	Two of the exhaust fans had exposed parts.	Enclose the belts and pulleys.
1910.219(d)(1)	1	Pulleys which were less than seven feet from the floor were not guarded. Two elevator motor pulleys in the elevator penthouse were unguarded. Two floor level belts and pulleys had the spokes of the pulley unguarded.	None	Provide a guard that fully encloses the pulleys, ropes and belts of the elevator drive motors and adjacent machinery.
1910.219(d)(1)	1	The Delta drill press had an inadequate guard in that it had openings that allowed access to the belts on each side.	The V-belt had a 2 inch gap between the drive belt and head.	Fully enclose the pulley and belt drives.
1910.219(e)(3)	1	Vertical and inclined belts and pulleys were not enclosed by guards, in that; the back side of the guard on the air conditioning unit 1E-6 was missing.	Air Conditioner unit 1E-6	Reconstruct the guards so that the back side is enclosed and the belt and pulley is fully enclosed.

1910.219(e)(3)	1	Vertical and inclined belts and pulleys were not enclosed by guards, in that; the back side of the guard on the air conditioning unit 3-E4 was missing.	Air conditioning unit 3-E4	Reconstruct the guards so that the back side is enclosed and the belt and pulley is fully enclosed.
1910.219(e)(3)	1	Vertical and inclined belts and pulleys were not enclosed by guards, in that; the back side of the guard on the air conditioning unit 3W-2 was missing.	Air conditioning unit 3W-2	Reconstruct the guards so that the back side is enclosed and the belt and pulley is fully enclosed.
1910.219(e)(3)	2	Vertical and inclined belts and pulleys were not enclosed by guards, in that; the back side of the guards on the air conditioning units 2E-13 and 2E-4 was missing.	Air conditioning units 2E-13 and 2E-4	Reconstruct the guards so that the back side is enclosed and the belt and pulley is fully enclosed.
1910.219(e)(3)(i)	1	The inclined belt and pulley guard was not adequate in that the openings were larger than 1/2 inch.	The measured openings were 3/4".	Install a guard that has openings smaller than 1/2".
1910.219(f)(1)	1	Chains and sprockets were not guarded by a complete enclosure.	2 vertical chains and sprockets had their guards missing.	Replace the doors and fully enclose the chains and sprockets.
1910.219(f)(1)	1	Sets of three gears are located at each end of the thermal desorption unit which were not guarded and accessible.	The thermal desorption unit has not been used in many years.	Lock out of service the unit and prior to the unit being used in the future guard the gears.
1910.219(f)(1)	1	Pulleys that were less than 7 feet from the floor were not guarded. Sheaves (pulleys) were unguarded on the elevator operating motor.	None	Provide a fixed guard that fully encloses the pulley and wire rope.
1910.219(f)(3)	1	Sprocket wheels and chains were not enclosed (guarded).	C-41 Processor (dip & dunk developer) chain and sprocket on its right side was not guarded.	Provide a fully enclosed guard over the chain and sprocket. If this is not feasible, due to movement of the machine, guard the sprocket and chain nip point.

Subpart P - Hand and Portable Powered Tools and Other Hand-Held Equipment

Hand and portable powered tools and equipment, general

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.242(a)	1	The vice located on the workbench was not maintained in a safe condition in that it was not securely fastened with	None	Remove the "C" clamps holding the vice and bolt it to the

Hand and portable powered tools and equipment, general

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.242(b)	1	Compressed air was used for cleaning purposes and not reduced to less than 30 p.s.i. and with effective chip guarding and personal protective equipment.	None	Purchase a nozzle approved for 30 p.s.i.

1910.242(b)	1	Compressed air used for cleaning purposes was not reduced to less than 30 p.s.i.	An unknown blue nozzle with no pressure reducer was being used for cleaning at pressure of greater than 30	Purchase an approved pressure reducer nozzle and use effective chip guarding.
1910.242(b)	1	Compressed air was being used for cleaning purposes at more than 30 p.s.i., in that; the nozzle at the bead blaster did not have relief holes that would reduce the air pressure to 30 p.s.i., or less.	Unapproved air nozzle used at bead blaster.	Instruct all employees to use nozzles that reduce the dead end pressure to 30 p.s.i. or less.
1910.242(b)	1	Compressed air used for cleaning was not reduced to 30 PSI.	Air nozzle w/o relief nozzle holes operating at 90 PSI	Buy a new nozzle or set the compressor regulator at 30 PSI.
1910.242(b)	1	Compressed air was being used for cleaning purposes at pressures greater than 30 p.s.i.	Air nozzle in use would not vent pressure.	Replace the nozzle with an acceptable nozzle that will reduce the air pressure to 30 psi or less and assure that the employee uses adequate chip guarding and personal protective equipment when using compressed air.

Guarding of portable powered tools

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.243(b)(2)	4	The air hoses which were measured at 140 PSI were repaired with water hose clamps.	There were 4 hoses using water clamps to repair leaks.	Replace the water clamps with swedge fittings.
1910.243(b)(2)	1	An air hose with 50 PSI had inadequate fittings in that water clamps were used to attach quick disconnects to hoses.		Install swedge fittings on all air hoses.

Subpart Q - Welding, Cutting, and Brazing

General Requirements

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.252(a)(2)(i)	1	The oxygen/acetylene system was covered with oil and grease and was stored next to combustible materials.	There was 1 welding unit containing oxygen and acetylene.	Remove all combustibles and clean all the oil and grease off the hose.

Oxygen-fuel gas welding and cutting

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.253(b)(2)(ii)	7	Cylinders were not secured to prevent being knocked over.		Secure all cylinders with chains or other methods.
1910.253(b)(4)(iii)	1	Cylinders were not stored at least 20 feet from highly combustible material or by a non-combustible barrier at	Oxygen and acetylene cylinders were stored on welding cart. The regulator had been removed and valve cap	Properly store cylinders. If the welding cart is being used, leave the

least 5 feet high having a fire-resistance rating of at least one-half hour.

returned to the cylinder.

regulator in place.

1910.253(b)(5)(ii)(D) 2 Compressed gas cylinders not secured on a truck were equipped with a regulator valve. Unless cylinders are secured on a special truck, regulators must be removed and valve protection caps, when provided for, shall be put in place before cylinders are moved.

Remove the regulator valve and replace it with a valve-protection cap.

Arc welding and cutting

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.254(d)(9)(i)	2	Welding operators did not report equipment defects to their supervisor, in that; the rod holders on the two welding machines in the basement of the boiler house, Bldg 108, were damaged and part of the insulating material was missing from the rod holder.		Replace the rod holders with new rod holders or replace the damaged, missing insulation on the rod holders.
1910.254(d)(9)(i)	2	Welding operators did not report equipment defects to their supervisor, in that; the rod holders on the two welding machines in the basement of the boiler house, Bldg 108, were damaged and part of the insulating material was missing from the rod holder.		Replace the rod holders with new rod holders or replace the damaged, missing insulation on the rod holders.

**Subpart S - Electrical
General Requirements**

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.303(a)(2)(i)	1	The dead front in the electrical disconnect Panel was loose, exposing employees to possible shock.	3 out of the 4 screws were missing	Install all the screws in the panel so no possible injury
1910.303(b)(1)	1	Electrical equipment was not free from hazards likely to cause death or serious physical harm to employees in that a hot plate used in a hood had exposed electrical wiring and the cap (plug) was not enclosed.		Replace the plug (cap) with an approved cap.
1910.303(b)(1)	1	A knockout plug was missing from the 900 box.		Cover the hole.
1910.303(b)(1)	1	Electrical equipment was not free from recognized hazards that are likely to cause death or serious physical harm to employees in that the anti-restart device for the grinder was inoperable	Machinist said the anti-restart device had stopped working and was on order.	Repair the anti-restart device for the grinder.
1910.303(b)(1)	7	Seven of the GFCIs were wired incorrectly preventing GFCIs from operating properly		Rewire the GFCI system.
1910.303(b)(1)	1	Electric equipment was not free from recognized hazards that could cause death or serious physical harm. A fluorescent light cover dislodged from the light fixture at	None	Refasten the light cover.

one end creating an overhead falling hazard.

1910.303(b)(1)	1	Electrical equipment was not free from recognized hazards that are likely to cause death or serious harm to employees. New lab hoods that are plumbed for water or use water had electrical outlets within 6 feet of the water source and were not GFCI protected in the following rooms: A-354, B-222, B-246(S-E), B-246(N-E), B-258, B-262, B-270, B-338, B-346, B-354 (Clean Room).	NFPA 70. NEC, Article 210-8(a) GFCI - All 125 volt, single phase, 15 - 20 amp receptacles -- installed to serve a counter top and are located within 6 feet of the outside edge of a wet bar sink -- shall have GFCI protection for personnel.	Install GFCIs for each hood in above rooms.
1910.303(b)(1)	1	The plug on the spot welding machine was repaired with "duct tape". The tape was not approved for electrical	The machine was a VTW-33 Hughes spot welder.	Install a new plug on the welder.
1910.303(b)(1)	1	In building 368, in the V110 storage bin, an approximately 25 foot extension cord/control box used by waste management personnel was wrapped in gray tape and the auditor could not determine the condition of the cable. The extension cord/control box was used for a waste management project. Drums of waste material were lowered through the floor to the lower level. The length of the cord was to provide distance during the task.	None	The cord was immediately tagged out of service. The extension cord/control box will be discarded.
1910.303(b)(1)	1	Electrical equipment was not free from recognized hazards in that the GFCI outlet type breaker was defective and would not test and would not trip when a GFCI tester was used for test purposes.	Sure test indicated proper ground with lights. The GFCI test did not trip GFCI breaker. Test buttons would not trip GFCI breaker. Sure test showed a resistance in the ground loop of 0.00 which indicates an open ground.	Replace the defective GFCI breaker/outlet.
1910.303(b)(2)	1	A 15 amp electrical power strip served 2 pieces of equipment that combined, exceeded the 15 amp rating of	Power strip rated for 15 amp, attached were a vacuum drying oven rated at 10 amp and an oven rated at 9	Remove the power strip and provide appropriate electrical
1910.303(b)(2)	1	The latch on an electrical panel was broken, so that the panel door cannot be opened.		Replace the latch.
1910.303(b)(2)	1	A pedestal fan for household use (two-prong cord) was operated in area with a pressurized oxygen cylinder used for welding purposes.	Employee uses the pedestal fan for cooling in this welding area. Fan is plugged in within three feet of oxygen cylinder.	Remove the pedestal fan from the area.
1910.303(b)(2)	1	Employees used a 12 inch portable fan that was not listed for industrial use.	In the laboratory, a regular 12 inch house fan was used by researchers. It was a Lakewood fan with a two prong plug which was not listed for industrial purposes.	Replace the fan or take it out of service.
1910.303(b)(2)	1	Relocatable power taps (surge protector/power strips) were not used in accordance with the listing of the equipment, in that; a high amperage load (refrigerator) was plugged into the power strip.	110 Volt AC	Plug the high draw piece of equipment (refrigerator) into a outlet and not into the relocatable power taps.
1910.303(b)(2)	1	Listed or labeled equipment was not used or installed in accordance with instructions included in the listing or labeling. In building 368, in room 127 on the northwest wall, a Delta band saw (serial number 94E95427, catalogue #28-245) was used by carpenters and had a thermal overload box hard wired into a duplex receptacle.	The saw had an electromagnetic restart that was demonstrated. An off/on switch was directly wired into a receptacle outlet. Also plugged into the same outlet was the electrical motor of the unit by a power cord. Discussion with the group could not determine why the on/off switchbox was there and if it was necessary, the	The machine will be checked out by an electrician who will determine the appropriate method to wire the piece of equipment with the thermal overload box.

			thermal overload box for the band saw was controlled by this on/off switch.	
1910.303(b)(2)	1	A Metallograph Power Supply outlet box designed to be attached to the wall was not.	None	Attach the outlet box to the wall.
1910.303(b)(2)	1	Relocatable power taps (surge protector/power strips) were not used in accordance with the listing of the equipment, in that; a high amperage load (refrigerator) was plugged into the power strip.	110 Volt AC	Plug the high draw piece of equipment (refrigerator) into a outlet and not into the relocatable power taps.
1910.303(b)(2)	1	There was a missing cover on a phone panel that was exposed to employees.	Along the north wall stairwell a phone service panel was missing a cover. Wiring in the area was enclosed in conduct and junction boxes had covers. The phone panels boxes on the other floors in the building had their	Cover the phone panel.
1910.303(c)	1	All splices and joints and free ends of conductors were not covered with insulation equivalent to that of the conductor. An electric cord leading to the refrigerator was spliced and covered with electrical tape.	None	Rewire the refrigerator with a new power cord and attachment plug.
1910.303(f)	1	The power control panel was not marked with a durable means to indicate its function.	None	Use durable means to mark the panel.
1910.303(f)	1	A 208 volt disconnect was not marked to indicate its purpose.	208 volt disconnect w/o identification and purpose is not self evident.	Locate what the box controls and label the purpose of box (ANL-E has SOP requiring this action).
1910.303(f)	1	The 240 volt electrical disconnect was not marked as to its purpose.	Electrical disconnect 240V w/o identification	Label the disconnect.
1910.303(f)	2	The 600 volt electrical disconnect and the Trane climate charger were not identified as to purpose.	600 volt electrical disconnect and electric Trane climate charger without identification or marking as to purpose.	Follow ANL-E protocol and mark electrical disconnect boxes when the purpose is not self evident.
1910.303(f)	2	Electrical disconnect boxes marked "X" and "Z" contained disconnects that were not clearly marked to indicate their purpose.	Panel box "X" and "Z" with disconnects not clearly marked.	Trace the disconnect switches as to function and permanently mark the disconnect switches as to
1910.303(f)	2	The two electrical disconnects were not marked to indicate purpose and purpose was not self evident.	Two large electric disconnects mounted 7'2" above floor level were not marked or identified as to their purpose.	Mark the disconnects.
1910.303(f)	1	The electric disconnect located along the north wall was not marked to indicate its purpose.		Mark the disconnect.
1910.303(f)	1	Panel board enclosures were not durably and permanently labeled to indicate their purpose.	A few panel boards in control centers were not adequately labeled. Most were sufficiently labeled.	Label all unlabeled panel board enclosures.
1910.303(g)(1) (ii)	1	A 480 Volt switch box was completely blocked.		Remove stored materials from around the switch box.

1910.303(g)(1) (ii)	1	A 480 volt switch box was completely blocked with equipment and other storage boxes.		Remove storage materials from around switch box
1910.303(g)(1)(i)	1	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the 220 volt, 3 phase transformer and control panel installed for the Klystron/RF Gun, blocked pre-existing electrical panels and disconnect.	220 volt, 3 phase transformer and control panel installed for the Klystron/RF Gun, blocked pre-existing electrical panels and disconnect.	Relocate the electrical transformer and control panel to an area that it does not block the pre-existing electrical panels and disconnects.
1910.303(g)(1)(i)	1	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the electrical equipment was blocked by material in storage.	Remove the material from storage.	Remove the material that is stored in front of the electrical equipment.
1910.303(g)(1)(i)	1	Sufficient access and working space was not provided and maintained about all electric equipment to permit ready and safe operation. A 220 VAC disconnect switch was blocked by permanently installed water treatment tanks and other equipment.	None	Relocate the disconnect switch to another location.
1910.303(g)(1)(i)	4	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table in that the disconnects were blocked by pipes, pipe racks and other structures.		Relocate the disconnects to an area where they are not blocked by pipes, pipe racks or other
1910.303(g)(1)(i)	1	Access to live parts operating at 600 volts or less was not maintained to at least 3 feet in accordance with Table S-1 of 1910.303(g)(1)(i).	Panel is E-PWR-1, Unit 13.	Remove items from in front of the electrical panel.
1910.303(g)(1)(i)	1	The area, 36 inches, in front of an electrical panel was blocked.	Film / video tape racks blocked the panel.	Clear the area in front of the panel.
1910.303(g)(1)(i)	1	A 36 inch clearance was not maintained in front of a circuit breaker panel.	The nature of the blockage was not noted.	Maintain the proper clearance in front of the circuit breaker panel.
1910.303(g)(1)(i)	1	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the 240 volt electric box was completely blocked with boxes and equipment.	240 volt electric box	Remove the material from in front of the electrical box.

1910.303(g)(1)(i)	1	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the disconnects for the condensate station pumps were blocked by plumbing pipes put in place after the disconnects were put in.	Disconnects blocked by plumbing installed after the disconnects were installed. Disconnects for condensate station pumps.	Move the electrical disconnects to an area where they will not be blocked by the plumbed pipe.
1910.303(g)(1)(i)	1	A 36 inch clearance was not maintained in front of the circuit breaker panel.	The information on the nature of the blockage was not noted.	Maintain the appropriate clearance in front of the breaker panel.
1910.303(g)(1)(i)	2	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the pre-existing circuit breakers and disconnects at column 'X' and Column 'Y' were blocked by electrical equipment that was installed later.	Two locations of blocked circuit breaker panels on the east northside of the building.	Relocate the electrical equipment or the disconnects
1910.303(g)(1)(i)	1	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the circuit breaker box marked 'MAIN' and a transformer disconnect were blocked by the large sprinkler piping.	Circuit breaker box labeled main and a transformer disconnect were blocked by the sprinkler's piping.	Relocate the 'MAIN' disconnect and the transformer disconnect to an area where they would not be blocked by the fire sprinkler's
1910.303(g)(1)(i)	4	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the three (3) disconnects for the low lift pumps were blocked by the piping that ran through the area. On the opposite wall, the disconnects for the pumps were blocked by a large pipe that ran in front of the disconnects.		Relocate the disconnects to an area where they are not blocked by pipes, pipe racks or other
1910.303(g)(1)(i)	1	A workspace of at least 30 inches was not maintained in front of the electrical disconnect in C-126. The power supply was located in front of the electrical disconnect.	None	Relocate electrical disconnect or laser power supply.
1910.303(g)(1)(i)	1	A 440 volt electric box was completely blocked. Normal maintenance and cut-off could not be done due to materials being stored in front of the electric box.	None	Remove all stored materials from in front of the electric box.
1910.303(g)(1)(i)	1	Electric equipment of 208 volts was blocked. Equipment and boxes were stored in front of the electrical box.	None	Clear out area in front of the electrical box.

1910.303(g)(1)(i)	1	A 120-208 volt electric box located on the east wall was blocked. Materials such as equipment, boxes, and other materials were stored in front of the electric box.	None	Clear out the area in front of the electric box.
1910.303(g)(1)(i)	1	An electrical panel was blocked by a door propped open.		Immediately abated.
1910.303(g)(1)(i)	1	A 36" clearance was not maintained around motor controls and a circuit breaker panel.	Specific information about the blockage was not noted.	Maintain appropriate clearance around electrical equipment.
1910.303(g)(1)(i)	7	The dimension of the working space in the direction of access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing, or maintenance while alive was less than indicated in Table S-	The seven electrical disconnect boxes were blocked by ventilation duct work. The closest box was 6" to the duct work. The farthest was 26".	Relocate the switches, or move the duct work.
1910.303(g)(1)(i)	4	A workspace of at least 30 inches was not maintained in front of the four electric disconnects located in A-142. The four disconnects in A142 had a 24-inch clearance.		Reposition the electric disconnects to obtain a workspace of at least 30 inches.
1910.303(g)(1)(i)	1	A workspace of at least 30 inches was not maintained in front of the electrical MD2A box. The MD2A electrical panel box with debris, computer parts, dolly trucks, and waste can was blocking clear access.	None	Remove debris and materials blocking access. This item was immediately abated.
1910.303(g)(1)(i)	1	Gas cylinders were stored in front of an electrical panel; required working clearances were not provided.		Relocate gas cylinders.
1910.303(g)(1)(i)	1	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the disconnects for the hot water pumps and for the A.C. units were blocked by piping and conduit.	Disconnects for the hot water pumps and for the A.C. units were blocked by piping and conduit.	Relocate the electrical equipment so that it is not blocked.
1910.303(g)(1)(i)	1	The dimension of the working space in the direction of access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing, or maintenance while alive was less than indicated in Table S-1. Boxes and other storage was in front on the electrical panel. Storage was within 3 to 8 inches.	None	Remove all storage.
1910.303(g)(1)(i)	2	There was inadequate clearance in the front of the circuit breaker panel and the equipment disconnect.		Maintain proper clearance around the electrical equipment.
1910.303(g)(1)(ii)	3	Three electrical disconnect boxes were block by Trane climate changers.	Disconnect box for climate changes.	Remove or relocate the disconnect boxes.

1910.303(g)(1)(ii)	1	A working space of three feet in front of a service disconnect was used as storage space. A portable fan blocked electrical cutoffs.	None	Abated immediately.
1910.303(g)(1)(ii)	1	Working space required by this subpart was used for storage, in that; the area in front of circuit breaker had brooms and cleaning material in storage in front of the breaker panel.	Brooms and cleaning material blocking the circuit breaker panel. The circuit breaker panel had a label on it warning not to use the area in front of the electrical equipment for storage.	Remove the material the is in storage from in front of the circuit breaker panel.
1910.303(g)(1)(ii)	1	Working space required by this subpart was used for storage, in that; the area in front of circuit breaker panel 'A' had boxes of material stored in front of the circuit breaker	Large circuit breaker panel 'A' had several boxes stored in the area directly in front of the circuit breaker panel.	Abated on the spot by removing the material from in front of the circuit breaker panel.
1910.303(g)(1)(ii)	1	Working space required by this subpart was used for storage, in that; the area in front of circuit breaker panel 'C' was used for storage of material.	Circuit breaker panel 'C' blocked by material in storage.	Remove the material from in front of the electrical equipment.
1910.303(g)(1)(ii)	1	A 480 volts switch box was found completely blocked.		Remove materials stored around the switch box
1910.303(g)(1)(ii)	1	Working space required by this subpart was used for storage A service panel was blocked by a gas cylinder cart.	None	Assure a minimum of 3 feet clearance in front of service panels in accordance with Table S-1 of 1910.303(g)(1)(i).
1910.303(g)(1)(ii)	1	Working space required by this subpart was used for storage, in that; an on/off switch and the switch gear in the corner of the building were blocked by material in storage.	The switch gear building is not normally occupied.	Keep the area in front of electrical disconnects and panels clear.
1910.303(g)(1)(ii)	1	Working space required by this subpart was used for storage, in that; the disconnects were blocked by material in	Multiple disconnects on the wall were blocked by material in storage.	Remove the material from in front of the electrical equipment.
1910.303(g)(1)(ii)	1	Working space required by this subpart were used for storage, in that; the area in front of circuit breaker panel 'A' had boxes of material stored in front of the circuit breaker panel.	Boxes of material was stored directly in front of the disconnects	Remove all of the material in storage to an area away from the disconnects.
1910.303(g)(1)(ii)	1	Sufficient access and working space was not provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of equipment. A cylinder rack, with potential for cylinder storage was blocking access to a disconnect marked CIR#20-22-24.		The building manager abated the situation immediately.
1910.303(g)(1)(ii)	2	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to table S-1, in that; the electrical disconnect labeled "Feed From Trans" on column 33 and the emergency laser shut down switch were blocked by equipment in storage.	Blocked electrical disconnects.	Remove the material in storage from in front of the electrical

1910.303(g)(1)(ii)	1	Working space required by this subpart was used for storage, in that; the area in front of circuit breakers at the refrigerator had boxes of material stored in front of the circuit breaker panel.	The circuit breaker panel next to the refrigerator was blocked by material in storage.	Move the stored material from in front of the refrigerator.
1910.303(g)(1)(ii)	1	A 480 Volt switch box was completely blocked.	None	Remove storage materials from around the switch box.
1910.303(g)(1)(ii)	1	Working space required by this subpart were used for storage, in that; the area in front of multiple disconnects was used for storage of material.	Boxes and empty drums in storage in front of disconnect boxes.	Remove the material from storage in front of the electrical
1910.303(g)(1)(ii)	1	An 80 volt switch box was completely blocked.		Remove storage materials from around the switch box.
1910.303(g)(1)(ii)	1	A 480 Volt switch box was completely blocked with boxes and equipment..		Remove all boxes and equipment from in and around the switch box.
1910.303(g)(1)(ii)	1	The dimension of the working space in the direction of access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing, or maintenance while alive was less than indicated in Table S-1 of 1910.303(g)(1)(ii). An electrical disconnect was blocked by a stored cylinder cart.	The disconnect was 440 volts, marked M ELEV D1.	Corrected.
1910.303(g)(1)(v)	1	Illumination was not provided in the area of 063 and the stairwell where electrical connections were located.	By 063 and the stairwell, a light was burned out.	Install a new light ballast.
1910.303(g)(2)(i)	1	Two electric light bulbs mounted on the electrochemistry cabinets were not protected with cages or enclosures.	Two electrochemistry cabinets had two electric light bulbs and were not protected with protective cages.	Guard live electrical parts of equipment, tools, circuits and energized sources.
1910.303(g)(2)(i)	1	Live parts of electric equipment operating at 50 volts or more were not guarded against accidental contact by approved cabinets or other forms of approved enclosures, in that; the face plate was missing from the 110 volt AC outlet behind the printer/copier located in the foreman's	Outlet that the printer/copier was plugged into had the face plate missing.	Install an approved face plate on the outlet.
1910.303(g)(2)(i)	4	The light bulbs mounted on the electro-crystallization boxes box were not enclosed in a protective cage.	4 120 volt electric light bulbs mounted on the electro-crystallization boxes box were not enclosed in a protective cage to prevent accidental contact with live conductors if bulb breaks..	Add a protective cage around the bulbs or movethe bulbs to a height over 8 feet.
1910.303(g)(2)(i)	1	The light bulb mounted on the radioactive box was not enclosed in a protective cage.		Add a protective cage around the bulb or move bulb to a height over 8 feet.
1910.303(g)(2)(i)(D)	1	In locations where electric equipment would be exposed to physical damage, enclosures or guards were not installed or so arranged and of such strength as to prevent damage, in that; the fluorescent light bulbs less than 7 feet above the	Fluorescent light bulbs less than 7 feet above the floor were not protected by plastic sleeves from damage. The lights could not be elevated to a height of 8 feet or higher because of the low ceiling in the area.	Install plastic protective sleeves over all fluorescent light bulbs that are less that 8 feet above the floor.

		floor were not protected by plastic sleeves.		
1910.303(g)(2)(i)(D)	1	In locations where electric equipment would be exposed to physical damage, enclosures or guards were not installed or so arranged and of such strength as to prevent damage, in that; the fluorescent light bulbs less than 7 feet above the floor were not protected by plastic sleeves.	Fluorescent light bulbs less than 7 feet above the floor were not protected by plastic sleeves from damage. The lights could not be elevated to a height of 8 feet or higher because of the low ceiling in the area.	Install plastic protective sleeves over all fluorescent light bulbs that are less than 8 feet above the floor.
1910.303(g)(2)(ii)	1	Guards were not arranged to prevent physical damage to electrical equipment exposed to such damage.	Lamps on equipment had lamp holders with exposed light bulbs.	Install a screen over the bulb to protect it from breakage.
1910.303(g)(2)(ii)	3	Light bulbs were not guarded in locations where physical damage could occur.	Light fixtures for machine shop equipment were not protected against breakages (vertical and horizontal lathes and band saw).	Install screens or other protective guards over the light bulb.
1910.303(g)(2)(ii)	3	Guards were not arranged to prevent physical damage to electrical equipment exposed to such damage. Lamps at equipment such as horizontal lathes and drill presses had lamp holders with exposed light bulbs.	None	Install a screen over each bulb to prevent it from breakage.
1910.303(g)(3)(1)	4	Working space in the direction of access to live parts operating at 600 volts or less, which might require examination, adjustments, servicing, or maintenance while alive, did not have a clear working space in front of the equipment that conformed to the table in this standard; in that, 3 disconnects for the low lift pumps were blocked by the pumps and piping that was associated with their operation. A fourth disconnect on the opposite wall was blocked by the large pipe that was associated with the disconnect.	3 disconnects for the low lift pumps were blocked by the pumps and piping that was associated with their operation. A fourth disconnect on the opposite wall was blocked by the large pipe that was associated with the disconnect.	Relocate the electrical disconnects so that the employees do not have to climb over the piping to get to the electrical disconnects and other electrical equipment.

Wiring design and protection

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.304(f)(4)	4	The path to ground on electric lamps at workstations was not permanent and continuous.	Four (4) electric lamps used at workstations were not provided electrical grounds.	Install appropriate grounding.
1910.304(f)(4)	2	The ground path on the work lamps was not kept permanent and continuous.	Electric desk type lamps were used as work lamps in: 1) the laser lab, and 2) an area near the compressed air	Re-wire both lamps with an electrical ground wire.
1910.304(f)(4)	2	The path to ground on two electric lamps was not kept permanent and continuous.	Two (old) electric lamps were not provided an electric path to ground.	Rewire the electric lamps with ground wires. ANL-E policy is to provide electrical grounds on all electrical equipment.
1910.304(f)(4)	1	The path to the ground on the workbench lamp was not permanent and continuous.	The workbench lamp was not provided an electrical conductor wire.	Install a new electrical wiring cord including a grounding conductor.
1910.304(f)(4)	1	The path to ground from circuits, equipment, and enclosures was not permanent and continuous. Outlet		Install or connect a proper grounding path.

		M3/C16 was tested with an electrical tester and was found to have a false ground.		
1910.304(f)(4)	1	The electrical path to ground on the Bio-reactor was not permanent and continuous.	Bio-reactor - electric cord w/o ground pin.	Repair the ground pin or replace the plug. ANL-E requires grounded electrical equipment.
1910.304(f)(4)	1	The electrical path to ground on the desk lamp was not kept permanent and continuous.	Metal desk lamp without electrical ground.	Rewire the lamp with a 3 wire system.
1910.304(f)(4)	4	The paths to ground on two electric lamps and two electric fans were not kept permanent and continuous.	Two lamps and two fans did not have electrical grounds.	Install and rewire with electrical grounding wire.
1910.304(f)(4)	1	The path to ground on the red electric lamp was not kept permanent and continuous.	A red table lamp did not have an electrical ground.	Rewire the lamp with an electrical ground wire.
1910.304(f)(4)	1	The path to ground for equipment was not permanent and continuous, in that ; the desk lamp was not grounded.		Rewire the lamp with a three wire power cord.
1910.304(f)(4)	1	The path to ground from circuits, equipment and enclosures were not permanent and continuous, in that; two 120 volt AC outlets had high impedance on the ground circuit when	115 volt ac outlets.	Test the outlets and correct the problem.
1910.304(f)(4)	1	The path to ground to the electrical lamp mounted on the Innovative Plasma System was not permanent and	IPLAS Innovative Plasma Systems Lamp w/o electrical ground	Follow ANL-E and NEC guidelines provide electrical grounding on all equipment.
1910.304(f)(4)	1	A pressure reactor apparatus for hydrogenation did not have a permanent and continuous path to ground.		Lock the unit out until appropriate grounding can be added.
1910.304(f)(4)	1	The Ultra Violet light cabinet was not grounded.	The metal cabinet is a book shelf that was retrofitted as a light cabinet.	Provide an electrical ground for the cabinet.
1910.304(f)(4)	4	The path to ground to the 4 electric lamps was not permanent and continuous.	4 ungrounded motel lamps	Provide a permanent and continuous path to ground.
1910.304(f)(5)(v)(C)(1)	1	Exposed non-current-carrying metal parts of cord - and plug-connected refrigerators which may become energized, were not grounded, in that; the Cold Spot Refrigerator had a two (2) wire power supply.	Tick Tracer indicated ungrounded refrigerator. Checked and found that the Cold Spot Refrigerator had a two wire power cord only.	Abated on the spot by cutting the plug off of the power cord.
1910.304(f)(5)(v)(C)(3)	1	A Baldor bench grinder had a ground wire broken at the motor (plugged into GFCI circuit).	None	Rewire to repair the ground wire.
1910.304(f)(5)(v)(C)(3)	1	In building 368, the storage area along hallway to V102, a Titan Airless Piston Pump Pro Paint Sprayer used by painters had the ground prong missing.	Electrical power cords were checked on a number of paint sprayers in an open area along hallway leading to paint area V102. Escorts could not locate serial number on 10 pieces of equipment since the units were covered in paint. Escorts indicated that painters do a check of equipment prior to use.	Have an electrician replace the plug.
1910.304(f)(5)(v)(C)(3)	1	Exposed, non-current carrying metal parts of cord and plug-connected equipment that may become energized were		The charger was taken out of service by the shop.

not grounded. The ground pin was missing on the cord plug for a ACME Change-O-Matic battery charger.

1910.304(f)(5)(v)(C)(8)	1	Portable hand held lamps were not grounded, in that; a metal trouble light with a metal reflector was powered by a two (2) wire power cord which did not extend a ground to the metal reflector.	110 Volt AC power.	Remove the trouble light from service. Do not permit two wire trouble lights to be purchased and brought onto the work site.
1910.304(f)(5)(v)(C)(8)	1	The fan with the metal fan had a two pronged (ungrounded) electrical connection.	This was noted at many locations in the building.	Replace the fan with one which has a grounded frame or rewire the
1910.304(f)(5)(v)(C)(8)	1	A metal articulating floor lamp had no ground wire.		Retrofit the lamp with grounded wire or replace the lamp with one that is grounded.
1910.304(f)(5)(v)(C)(8)	1	Portable hand held lamps were not grounded, in that; a metal trouble light with a metal reflector was powered by a two (2) wire power cord which did not extend a ground to the metal reflector.	110 Volt AC power.	Remove the trouble lift from service. Do not permit two wire trouble lights to be purchased and brought onto the work site.
1910.304(f)(5)(v)(C)(8)	1	A fan with a metal guard had a two prong plug and needs to have a continuous and effective ground.		Install a grounding type connection or discard the fan.

Wiring methods, components, and equipment for general use

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.305(a)(2)(iii)(G)	1	The flexible cord was not protected from accidental damage in that the metal enclosure for UV light had no grommet at the point where the 110V electrical cord entered the cabinet, exposing the insulation to sharp metal	The metal cabinet was a bookshelf retrofitted for use as a UV light cabinet.	Provide a grommet around the internal circumference of the point where the electrical cord penetrates the cabinet to protect the cord from damage.
1910.305(a)(2)(iii)(G)	1	Flexible electrical cords passing through sharp openings were not protected from damage located in the lab hood.	Electrical cords run through holes in hood - holes have sharp edges and cord not protected - no grommet, etc.	Carefully install electric cords and cables into hoods where sharp corners/edges exist.
1910.305(a)(2)(iii)(G)	1	Flexible electric cords passing through sharp corners were not protected from damage .	Cord was for a light fixture.	Place a grommet in the hole to protect the cord.
1910.305(a)(2)(iii)(G)	3	Flexible electrical cords passing around sharp corners were not protected from damage located in the lab hood (Hood	Electrical cords run passing around sharp corners in Hood #2 - corners have sharp edges and cord not protected - no grommet, etc.	Carefully install electric cords and cables into hoods where sharp corners/edges exist.
1910.305(b)(1)	1	Unused openings in cabinet, boxes, and fittings were not effectively closed. A vacuum breaker located behind the bandsaw had an opening in the disconnect box.		Install a blank to close the openings.
1910.305(b)(1)	1	Conductors entering boxes, cabinets or fittings were not protected from damage, in that; the power cord for the telephone equipment ran through a hole in the side of the phone box that had sharp edges that were not dressed down	Power cord for phone system ran through a field cut hole that had sharp edges that were not dressed down and a plastic insert was not used.	Dress down the opening to eliminate the sharp edges and use a plastic insert to protect the power cord from damage.

smooth and a plastic insert was not used.

1910.305(b)(2)	1	The junction box was not covered properly.	Located in room to the right of the door and above when entering.	Install a cover on the junction box.
1910.305(b)(2)	3	Electrical tape was used to cover three single pole circuit breakers. (#17, #19, #21)		Install covers.
1910.305(b)(2)	1	The cover is missing from the electrical box.		Replace the cover.
1910.305(f)	1	The cord and plug on the tablesaw had partially separated leaving the conducting wires exposed.		Corrected immediately
1910.305(g) (i) (iii)(D)	16	16 multiple outlet extension cords were fastened to work benches and used as a substitute for the building's fixed outlets.	None	Replace the multiple outlet bars with building outlets or hard wired work bench outlets.
1910.305(g)(1) (iii) (C)	2	There were flexible cords used in a prohibited manner.	There were 2 flexible electric cords run through a hole in the rear of the work bench.	Reroute the cords.
1910.305(g)(1)(iii)(A)	1	The electric cord power strip used in the number 3 laser area was used as a substitute for fixed wiring.	A power strip was used in the number 3 laser area in lieu of permanent electrical wiring.	Provide adequate electrical fixed wiring outlets.
1910.305(g)(1)(iii)(A)	2	The two (2) electric power strips in B-102 were used as a substitute for fixed electrical wiring.	Two (2) electric power strips were used in lieu of fixed wiring.	Install fixed electrical 120 volt outlets.
1910.305(g)(1)(iii)(A)	1	Flexible cable was used as permanent wiring: Electrical cable run over pipe supporting pipes, duct support-208 volts feeds a bio-reactor.	Building manager thinks that this was intended to be temporary wiring but there is no label to that effect.	Install permanent fixed wiring or label and treat the existing installation as temporary.
1910.305(g)(1)(iii)(A)	3	The three (3) electric power strips in A126 were used as a substitute for fixed electrical wiring.	Two power strip electric outlets in the diffusion pump area and the power strip in the center north rear area were used in lieu of fixed electrical wiring.	Install fixed electrical wiring and 120 volt outlets.
1910.305(g)(1)(iii)(A)	8	Electric power strips were used in and around A-114 in lieu of fixed electrical wiring because an adequate number of 120 volt outlets were not provided.	Eight (8) power strips used in lieu of fixed wiring.	Provide fixed electrical outlets and remove the power cord strips.
1910.305(g)(1)(iii)(A)	1	A flexible cord was used as a substitute for fixed wiring.	A flexible cord was attached to the metal conduit exposing employees to possible shocks. The flexible cord was 110 volts.	Remove flexible cords, or install a conduit.
1910.305(g)(1)(iii)(A)	1	A flexible cord was used as a substitute for fixed wiring for the Gast compressor.	A flexible cord was used as permanent wiring for the Gast compressor. The cord was approximately 4' long, and the compressor was anchored to the floor.	Hard wire the compressor.
1910.305(g)(1)(iii)(A)	1	Flexible electrical cords were used as a substitute for the fixed wiring of a structure, in that; the fluorescent light on top of the Laser Room Roof was wired by a long flexible electrical cord.	Flexible electrical cord used in lieu of fixed wiring of the structure.	Rewire the area so that the flexible cord can be replaced with fixed wiring.
1910.305(g)(1)(iii)(A)	1	A flexible cord was used as a substitute for the fixed wiring	A multiple outlet strip was being used.	Remove the power strip and install

		of a structure.		a fixed box with receptacles.
1910.305(g)(1)(iii)(A)	1	The electric cord power strip in B-194 was used in lieu of fixed wiring where adequate electrical 120 volt outlets were not provided.	None	Provide adequate electrical fixed wiring outlets.
1910.305(g)(1)(iii)(A)	15	Electric power cord strips were used in lieu of fixed wiring in the following locations: E-134, M-018, M-024, R-089 and E-126.	In many areas, the researchers and scientists stated that they would like more electrical outlets and not have to use power cords in lieu of fixed wiring.	Install appropriate electrical outlets.
1910.305(g)(1)(iii)(A)	4	The four (4) flexible electric power cord strips were used in lieu of fixed wiring where adequate fixed electrical was not provided.		Provide fixed electrical 120 volt wiring.
1910.305(g)(1)(iii)(A)	4	The four (4) electric power strips in B126 were used as a substitute for fixed electrical wiring.	Four (4) electric power strips were used in lieu of fixed electrical wiring.	Install fixed electrical 120 volt outlets/wiring.
1910.305(g)(1)(iii)(A)	1	Flexible cords and cables were used as a substitute for the fixed wiring of a structure. Temporary wiring was used for an alarm used for the reactor. According to building manager, this alarm is no longer used.	None	Remove the temporary wiring.
1910.305(g)(1)(iii)(B)	1	Flexible electrical cords were run through holes in walls, ceilings, or floors, in that; the power cord for the computer relay was run through a hole that was bored through the	Power cord for the computer relay was run through a hole in the wall.	Install permanent wiring for the computer relay.
1910.305(g)(1)(iii)(B)	2	A flexible electrical cord was run through a hole in the ventilation hood, and a multiple outlet receptacle was attached to the ventilation hood side wall.	none	Remove electrical cords and outlets from ventilation hood.
1910.305(g)(1)(iii)(B)	1	A flexible cord and/or cable was used in a prohibited manner where it was run through a hole in the ceiling.	A pendant cord in the lab was run directly through a hole in lab ceiling.	Rewire the pendant cord.
1910.305(i)(2)(ii)	2	Two electric outlets were located under the emergency shower.	Two (2) electrical outlets located under the emergency shower were not approved for wet locations.	Relocate the two electrical outlets so that they are not in wet
1910.305(j)(1)(i)	1	The flexible electric cord running to the laser lab was attached to building structures and not installed as fixed electrical wiring as required.	None	Install fixed electrical wiring to eliminate flexible electric cord running over the building structures and equipment.
1910.305(j)(1)(i)	3	The vacuum control rack with 3 flexible electrical cords/cables were pinched on the rack structure.	None	Reposition the electrical cords or the vacuum control rack or place the electrical cords in the conduit. Cords were pinched on the vacuum control rack door.
1910.305(j)(1)(ii)	1	Handlamps of the portable type supplied through flexible cords were not equipped with a substantial guards, in that; the flood light bulb on the lab stand did not have a guard to protect it from breaking.	Flood light bulb on a lab stand did not have a cover installed to protect the bulb from breaking.	Install a suitable guard over the bare light bulb.

1910.305(j)(2)(ii)	1	Receptacles installed in a wet or damp location were not suitable for the location, in that; the 110 volt ac outlets on the walls where water was used to wash down the floors and walls did not have water tight face plates installed on the outlets.	Water from hose pipes is used in the area to wash down the floors and walls. There were no water tight covers installed on the outlets and water could have entered the outlets.	Install face plates that will prevent water from entering into the outlet box when water is being used to wash down the floor and walls.
1910.305(j)(4)(ii)	1	A disconnecting means was not located in sight from the controller location of two motor driven mixer agitators.	The mixer swere located in a building that was constructed in the 1950s and the electrical wiring is probably of the same vintage.	Install disconnects for the motors.

Hazardous (classified) locations

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.307(b)(2)	1	A methane cylinder was installed next to an electrical panel. The lab would be considered Class I, Division 2 due to presence of the methane cylinder (see 1910.399). Electrical equipment/installations in the lab are not approved for the hazardous (classified) location.		Move the methane cylinder to an approved location, or modify the electrical installation in lthe ab to Class I, Division 2.
1910.307(b)(2)(i)	1	A heat lamp was not approved for the class of location. A heat lamp was used in a ventilation hood that was not approved for Class Division 1 areas.	None	Remove the heat lamp from the hood.
1910.307(b)(3)	1	The equipment, wiring methods, and installation of equipment in hazardous locations was not intrinsically safe, or approved for a hazardous location (classified) or safe for a hazardous location. The converted lab hood was being used as a flammable paint spray booth with an unapproved electric light. (non-explosion proof)		Remove the electric light and de-energize its power source.
1910.307(b)(3)	1	Equipment, wiring methods, and installation of equipment in hazardous locations was not intrinsically safe or approved for a hazardous location. The ventilation hood was used with flammable liquid (acetone). Additionally, the hood had 2 outlet boxes which were not approved for a hazardous location (explosion proof).	None	Remove the outlet boxes or stop using flammable liquids in the hood.
1910.307(b)(3)	58	Electrical outlet installations in laboratory ventilation hoods were not approved for Class I, Division I locations in the following laboratories: A-118, A-178, A-182, A-190, B-102, B-110, B-113, B-126, B-154, C-118, C-142, C-150, C-158, C-162, C-166, C-190, D-142, D-166, D-174, E-150, E-162, E-182, E-190, F-154, F-158, F-162, F-166, F-170, F-174, F-182, F-186, M-018, M-022.	Laboratory ventilation hoods, where the hazard of combustibility and flammability of vapors, liquids, gases and dusts exists, did not have class rated Division-Class I electrical 120 volt outlets.	The installation of electric wiring and outlets will be a major expense item. This issue was found throughout the Chemistry 200 building and is extensive.
1910.307(b)(3)	3	Electrical outlet installations in lab ventilation hoods were not approved for Class I Division I locations in the following: (a) The Heterogeneous Catalysis Group hood, (b) The Vac Frame, and (c) the lab ventilation hood.	1) Ventilation Lab Hood w/ duplex outlet not Class I, Division I 2) Hererogeneous Catalysis Group - removing sulfur from diesel fuel	Rewire the three hoods.

3) Vac Frame - 2 outlets

Subpart Z - Toxic and Hazardous Substances

Asbestos

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1001	20	Review of medical records of employees who reported exposure to asbestos revealed that (1) No industrial hygiene data was available that quantified the exposure levels, (2) Physical exams were provided periodically for exposed individuals, (3) Chest X-Rays were provided approximately on an annual basis and (4) No B readings were obtained for chest x-rays.		(1) Quantify exposure to asbestos, (2) limit the number of employees exposed to asbestos, (3) Provide an annual physical exam and chest x-ray to exposed employees and (4) Send all chest x-rays to B readers.
1910.1001(j)(4)(i)	50	Pipe chases, on the second floor of building 223, containing encapsulated asbestos were not posted with	Pipe chases contain sprayed-on asbestos and some pipe insulation with asbestos. First floor is posted at the chase entries. Those on second floor are not.	Post pipe chases on second floor as done on the first floor.
1910.1001(j)(4)(i)	3	Asbestos containing pipe insulation was not labeled as being asbestos containing.	Labels had been attached but due to heat conditions, the labels were falling off the insulation.	Affix labels in such a way that they will stay on pipes such as painting on or using mechanical fasteners such as "wire tips".
1910.1001(j)(4)(i)	1	No sign was posted to notify employees that they were entering an area where pipe insulation contained asbestos.	When entry in asbestos-containing area was from the elevator, there was no sign posted to inform employees that asbestos was present.	Post a sign at the elevator to properly notify employees, or affix labels to the asbestos containing pipe insulation.
1910.1001(j)(4)(i)	1	Warning labels were not affixed to insulation. The room was marked as containing asbestos.		Label all ACM & PCAM.
1910.1001(j)(4)(i)	1	Warning labels were not affixed to insulation. The room was marked as containing asbestos. No elbows were marked as asbestos.		Label all ACM & PCAM.

13 carcinogens

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1003(g)(1)(i)	10	Medical records of ten employees were reviewed for compliance with medical surveillance requirements. It was difficult to determine the date that employees began working with the carcinogens. Some employees had physicals each year for two to three years then skipped a year or two. No explanation was noted in the files.		(1) Keep an up to date list of employees who enter regulated areas, (2) Provide physical exams annually and (3) include family history and occupational history including genetic and environmental factors.

Inorganic arsenic

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1018	3	A review of the medical records of 3 individuals who self-reported exposure to arsenic revealed that (1) No monitoring data was available to determine exposure risk to individuals and (2) Chest x-rays were provided for some	Exposed individuals were given periodic physical exams.	Conduct industrial hygiene testing to quantify employee exposure to arsenic and (2) Provide medical surveillance to workers exposed above the action level.

Access to employee exposure and medical records

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1020(g)(1)	30	Employees were not advised of their rights to access air sampling results performed in their work areas.	No copy of the standard was posted on bulletin boards in Buildings 363A, 363, and 363B. Some employees remembered sampling being done but could not recall results.	Post a copy of 1910.1020 on bulletin boards with other posters, and annually advise employees of their rights to see sampling results.

Lead

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1025(d)(2)	1	Monitoring was not done to determine whether employees working with lead solder which contained lead were exposed to lead above the action level.		Conduct initial monitoring for lead.
1910.1025(d)(2)	14	Initial monitoring for lead exposure was not conducted for employees who solder using "44" Rosin IWX Cored Solder which contains 40% lead in the following rooms: A-056, C153, A-162, G157, G151, C-121, A229 and G101.	Soldering was being done on benches where other work and eating occurs.	Conduct initial monitoring for lead or use lead free solder.
1910.1025(d)(2)	1	The employer did not determine if any employee might be exposed to lead at or above the action level.	Personal air samples should be taken during the use of a lead base paint. The paint was manufactured by Glidden and the color was "Ultra-Hide Yellow" rubber paint containing pigment yellow 34 with 5-10% lead by	Take personal samples for lead during the paint operation.
1910.1025(h)(1)	14	Surface areas were not maintained as free as practicable of accumulations of lead.	Soldering is done on work benches where employees eat and drink. Locations: A-056; C-153; A-162; C-157; C-151; C-121; A-229; C-101	Perform surface (wipe) sampling of work areas to determine actual contamination levels and any cleanup strategy needed. Use alternate, lead free, solders
1910.1025(i)(1)	14	Until initial monitoring and surface sampling has been completed, do not allow employees to eat or drink at work benches where soldering is performed.	The locations are A-056, C-153, A-162, C-157, C-151, C-121, A-229, C-101.	Remove food and drink from the work area. Use alternate, lead free, solders.
1910.1025(j)(1)(i)	1	There were no records of blood lead testing for employees trained in lead hazards, who were presumed to be exposed		(1) Ensure that the occupational medical program knows which

to lead.

employees are at the action level for lead, (2) maintain a current list of lead exposed workers, (3) maintain information in employee medical files regarding the employee's exposures and (4) provide medical surveillance as required by OSHA standards.

Cadmium

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1027	3	Review of patient charts of workers who reported exposure to cadmium revealed that (1) There were records of exposure monitoring to show that the employer had determined whether employees were exposed above the action level, (2) medical surveillance physical exams were performed periodically and (3) No biological monitoring		Perform a hazard analysis which includes air sampling to determine if employees have significant cadmium exposure, (2) perform annual medical surveillance (physical exams) and (3) If employees are exposed to levels of cadmium in excess of the action level, implement a compliance plan, begin biological monitoring and where appropriate, mandate the use of personal protective equipment.
1910.1027(d)(1)	1	The employer did not conduct initial monitoring or provide objective data for employee exposure to cadmium. Conduct surface monitoring.		Make an initial determination relative to cadmium exposure.
1910.1027(d)(1)(i)	1	Operations covered by this section were not monitored to determine if any employee may be exposed to cadmium at or above the action level.	Small particles of cadmium are produced by reducing cadmium nitrate with a sodium sulfide solution.	Review this operation and conduct monitoring to assure that there is no exposure to cadmium and other chemicals.

Benzene

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1028	3	Review of the medical records of employees who reported exposure to benzene revealed that (1) No quantification of benzene exposure was available, (2) Physical exams were performed periodically and (3) No laboratory evaluation (CBC) was performed as part of a screening exam.		Quantify worker exposure to benzene and provide periodic evaluation of exposed employees following the protocols listed in this standard.
1910.1028(e)(1)	5	Initial monitoring for benzene has not performed in the following labs (date of audit after lab): B-190 (micro mole solutions) 7/9/03, E-190 (extractions) 7/11/03,		1. Review use of benzene site wide 2. Perform initial monitoring where benzene is used.

M-024 (synthesis work) 7/11/03,
 A-182 (production 1 liter/year) 7/14/03, and
 A-114 (ml denterated benzene) 7/14/03.

3. Update monitoring where not

1910.1028(e)(1) 1 The employer did not conduct initial monitoring or provide objective data for employee exposure to benzene.

Make an initial determination relative to benzene exposure.

1910.1028(e)(2) 2 An employee uses reagent grade benzene in solvent extractions and transfers waste solvent and not personal air sampling has been performed for these operations.

Employee has been doing this work for 1 1/2 months and has another month to go. IH group has not sampled for exposures.

Perform air sampling during both operations described for TWA and STEL.

Bloodborne pathogens

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1030(c)(2)(i)	1	A complete list of occupations in which employees may be exposed to blood and body fluids was not maintained in the exposure control plan. Only examples of occupations which may be included were discussed.		(1) List all job categories as required, (2) State which employees require Hepatitis B vaccinations and which job categories will receive vaccinations at the time of exposure and (3) maintain notations in the employees medical files regarding the type of exposure.
1910.1030(f)	1	Medical records showed no evidence that one fire fighter had been offered hepatitis B vaccinations.		Offer Hepatitis B vaccinations to employees who work in job classifications determined to have exposure to blood and body fluids. Maintain a copy of the required signed declaration sheet which shows that an employee who was offered vaccination has declined.

Formaldehyde

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1048(d)(2)	1	The employer did not conduct initial monitoring or provide objective data for employee exposure to		Make an initial determination relative to formaldehyde exposure.

Methylene chloride

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1052	5	Review of medical records of employees who self-reported exposure to methylene chloride revealed that no sampling data was available to determine whether employees were exposed to significant levels of methylene chloride.		(1) Conduct an industrial hygiene evaluation to determine exposure to methylene chloride, (2) consider biological monitoring of exposed employees and (3) Evaluate the use

of PPE for exposed individuals.

1910.1052(d)(1) 1 The employer did not conduct initial monitoring or provide objective data for employee exposure to

Make an initial determination relative to methylene chloride exposure.

Ionizing radiation

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1096(d)(3)(ii)	1	The room was posted as a Radiation Area but the maximum dose rate for the room was listed as 190 mRem/hr (this dose rate denotes a High Radiation Area).	The building ES&H coordinator contacted the area Health Physics Technician (HPT) who stated that there was a small spot on the under side of an item in the room that read 190 mRem/hr on contact. A reading at 30 centimeters (12 inches) from the object could not be taken due to the accessibility of the spot. Posting of an area is based on the maximum 30 cm. dose rate, or general area dose rate, not the highest contact dose rate.	Resurvey the room and post the room based on the highest 30 cm. dose rate found. If an HPT thinks that it is necessary to inform personnel of the highest contact dose rate in an area, this information could be noted elsewhere on the posting. The 30 cm. dose rate was 50 mRem/hr on 7/16/2003.
1910.1096(e)(3)(i)	1	A dry active waste (DAW) radioactive waste can, was stored in an area of the C Wing Service Floor that was not posted "Caution Radioactive Materials".	Area 063 & stairwell. Radioactive waste can - low level rad stored under stairwell w/ plastic bags inside.	Remove the DAW can to a posted secure area.
1910.1096(e)(5)(i)	3	Three hoods were observed posted "Clean Work Only, No Radioactive Material Allowed" but each was also posted with a "Caution, Radioactive Material" sticker.	It was explained that it was building policy to post each hood in M Wing with a "Caution, Radioactive Material" sticker. However, the two postings are contradictory.	Survey the hoods and post appropriately. The "Caution, Radioactive Material" stickers were removed on 7/16/2003.

Hazard communication

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1200(f)(1)	1	The chemical manufacturer, importer, or distributor did not ensure that each container of hazardous chemicals leaving the workplace was labeled, tagged or marked with the appropriate hazard warnings and name and address of the chemical manufacturer, importer, or other responsible party, in that; the 55 gallon drum of unknown radioactive material shipped from Oakridge, TN., was stored among empty 55 gallon drums.	55 gallon drum from Oakridge that was marked radioactive did not have any labels or markings on the drum.	Identify the contents of the drum and dispose or store the drum in a proper storage/disposal area.
1910.1200(f)(5)	1	Numerous five gallon pails of potentially hazardous sodium bisulfate were not labeled to identify their contents.	Labels that were on containers had fallen off	Re-label containers with a more permanent method.
1910.1200(f)(5)	1	Each container that contained hazardous material was not labeled, tagged or marked with the identity of the material and any hazards associated with the material, in that; the welding rods in three (3) containers did not have labels to	Welding rods did not have warning labels that provided hazard warnings.	Label the three welding rod containers with the specific hazards associated with the rods.

		provide hazard warnings.		
1910.1200(f)(5)	1	Each container of hazardous chemicals in the dip tank area was not labeled, tagged or marked with the identity of the chemical (Agitene) and the appropriate hazard warnings.		Label each container with the information required in 1910.1200(f)(5)
1910.1200(f)(5)	1	A 30 gallon drum of potentially hazardous chemicals was not labeled to identify its contents		Label the container
1910.1200(f)(5)(i)	1	A vessel (National Board Code built to ASME Code standards) containing glycol pressured to 50 psi on the gauge did not have a label to identify its contents.	None	Label containers.
1910.1200(g)(1)	1	The employer did not have MSDS for each hazardous chemical.	Zep Floor Finisher used but no MSDS available for employees.	Get MSDS for Zep.
1910.1200(g)(8)	1	Required material safety data sheets for each hazardous chemical were not readily accessible during each work shift to employees when they are in their work area(s), in that; there were no MSDS sheets for Roto-Liquid Drain Opener.	No MSDS sheets for Roto-Liquid Drain Opener.	Obtain MSDS sheets for the drain opener from the manufacturer or supplier.
1910.1200(g)(8)	3	MSDS sheets were not readily accessible for Hilti epoxy compounds and Durock Cement Board in the carpenter	MSDS sheets were difficult to locate within the large notebooks. On-line access is sometimes located in areas not readily accessible to employees, e.g. in supervisor's or secretary's office.	Assure that each chemical found in flammable cabinets has an MSDS available. If on-line access is the preferred method, assure employees can use and access terminals throughout the work
1910.1200(h)(3)(ii)	4	Employees receiving hazard communication training were not given training in the specific physical and health hazards of the paints and silica dust being used.	Employees indicated that there is a generic, on-line program, but little or no specifics on the hazards of the paints or joint compounds they use. Supervisors agree.	Tailor generic hazard communication training to include specific hazards of the areas in which painters work.

Occupational exposure to hazardous chemicals in laboratories

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1910.1450(d)	8	Initial monitoring for methylene chloride was not complete and must be updated in listed instances: B-194, e-170, E-150, M-024, E-182, F-102, C-118, A-182.	Industrial hygiene should use the chemical management system (CMS) to identify quantities used and prioritize MC monitoring.	1. Review methylene chloride use. 2. Perform initial monitoring where it has not been performed, 3. Update methylene chloride monitoring where it has not been performed recently (prior to 2000).
1910.1450(d)(1)	1	The employer did not conduct initial monitoring or provide objective data for employee exposure to acrylamide (Rooms B-270 & B-223) and chloroform		Make initial determination.
1910.1450(d)(1)	1	Monitoring of employee exposure to a substance regulated by a standard (1910.1051-1,3-Butadiene) was not	A tank of 1000 ppm of 1,3-Butadiene was secured to a work bench within 3 feet of the fume hood. The 1,3-	Monitor for 1,3-Butadiene and evaluate the work process.

		conducted where there was reason to believe that exposure level exceeds the action level (0.5 ppm)	Butadiene is used for instrument calibration. The employee who uses the 1,3-Butadiene was not available for interviewing so the actual process was not observed.	
1910.1450(e)(3)(iii)	1	A chemical hood was used for storage of chemicals. Three 500 g bottles of n-tridecane and one bottle of acetic anhydride (flammable) were stored in the fume hood	None	Relocate the materials to other storage locations.
1910.1450(e)(3)(iii)	1	Excessive amounts of chemicals and other items were stored in ventilation hoods.	Storage of chemicals in ventilation hoods will prevent proper operation of the hood.	Remove all items from the hood.
1910.1450(e)(3)(iii)	1	Standard operating procedures relevant to safety and health considerations were not followed when laboratory work involved the use of hazardous chemicals. The fume hood had two 12 inch by 12 inch sliding glass panel doors which were broken and had sharp edges.	None	Replace the broken glass.
1910.1450(e)(4)	1	Decontamination procedures were not established and implemented for mercury. Beads of mercury have been spilled inside the hood on the foil liner. Beads of mercury have been spilled on floor beneath hood.	Mercury is used a electrodes.	Clean up spilled mercury from hood and floor.

Construction - Fall Protection

Fall protection systems criteria and practices

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1926.502(d)(15)	1	Maintenance employees who work on roofs 25" above ground have been instructed to hold the harness of the second employee working within 6' of the edge of the roof.	Maintenance rep states that they were told they would be in compliance if one wore harness and other held harness. No anchor points exist on roof.	Survey all building roofs to determine if maintenance work done on exhaust hoods and stacks can be done by staying more than six feet from the roofs edge. Develop a written plan and train all exposed maintenance personnel. Reference 1926.502(k). Where possible and feasible, erect guard rails.

Construction - Toxic & Hazardous Substances

Asbestos

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
1926.1101(g)(1)(iii)	1	Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers did not occur, in that; there was a small bag labeled "Asbestos Waste" containing strips of paper and textile that was torn open.	The building manager abated immediately by putting the broken bag into a clear plastic bag.	Dispose of all asbestos waste through proper channels and following good work practices.

General Duty Clause

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
5(a)(1)	1	The four electrical outlets located at the water sink did not trip at 7 milliamps as required. Reference NFPA 70 NEC, Article 210-8(a).	The GFCI protected outlets located adjacent to the water sink did not trip until the 30 milliamp level.	Replace worn GFCI with new functional unit.
5(a)(1)	1	The project review document and the SOP for the first phase of the laser system constructed in LCA 211 DD076 did not address the physical hazards of the development and installation of the Table-top Electron Accelerator including, but not limited to, the two chain hoists, hand tools, and electrical tools and related equipment required for the job task.	D076 Laser room: A spur geared chain hoist did not have a safety latch properly installed on the hook.	Use the format of a Job Safety Analysis in the Project Review Document as indicated by the ANL-E EHS manual.
5(a)(1)	1	The "spur geared" chain hoist located in the laser room was not provided with an operable safety latch on the hoist hook; Reference ANSI/ASME B30.16-1987 16-1.2.9.	Hoist Capacity: 2000 Lbs. The laser room was under construction. The safety latch was twisted and did not function as needed.	The safety latch was re-positioned and tightened with a wrench.
5(a)(1)	1	Fiberglass ladders that were damaged were not removed from service, in that; the 20 foot extension ladder on truck ME239 had split side rails.	Section 5(a)(1) used because there are no standards that address fiberglass ladders.	Abated on the spot by removing the ladder from the truck and attaching a tag specifying that the ladder was out of service.
5(a)(1)	1	The temperature and pressure (T&P) valve from the water heater was not properly vented in that the vent terminated in a sink in the stairway between the 2nd and 3rd floor of the water treatment building. See public law 91-596, local plumbing code.	The temperature and pressure (T&P) valve was vented into a large sink in the stairway. The copper pipe was positioned high above the bottom of the sink.	Properly vent the T&P valve
5(a)(1)	6	Safety measures associated with excimer laser gases are not in accordance with ANSI Z136.1-2000 references in terms of piping, fittings, toxic gas monitoring, regulators, emergency shutdown, flow restrictors. The most common gas noted is fluorine 0.1 to 5%. Hcl may also be used. --A-1-2, A-150, B-194, B-102, D-174.	Applicable ANSI References- Dietz, Al and E Bradfor, Safe Handling of Excimer Laser Gases.The photonics and Applications Handbook 1991. ---Lorenz, AK, Gas Handling Safety for Laser Makers and Users, Lasers & applications, March 1987.--Lawerence Livermore National Laboratory, ES and H Manual Document 14.6 Safe Handling of Fluoring.	Use only stainless steel piping as opposed to copper, which is very soft., Install and maintain toxic gas detectors, Butt weld all tubing fittings rather than using compression fittings, Support tubing on substantial supports, tubing must not be self supporting. Assure tubing is clear of aiseways., Assure that regulators are approved for corrosive gas service and that they are inspected regularly., Install flow restrictors in cylinder valves (0.01 meh diameter is recommended), Label toxic gas lines such that they are identifiable from any viewing angle.
5(a)(1)	1	A cylinder of Silane was in storage in a lab outside of a ventilated, sprinkled cabinet. Reference ANL-E ESH		In accordance with section 13.2.9 of the ANL-E ESH manual, assure

				that the cylinder of 10% Silane mixture of compressed gas is stored in a sprinkled flammable gas cabinet. Assure that the PFS-FEC fire protection has reviewed the
5(a)(1)	1	A National Board Code (built to ASME code standards) vessel with 50 psi on gauge did not have a pressure relief device.		Install a pressure relief device.
5(a)(1)	1	The emergency shower was not inspected in accordance to the manufacturer's instructions. Reference ANSI Z358.1 1990 5.5.1	The emergency shower was last inspected on 9/12/02.	Ensure that emergency showers are tested/inspected at least every 6 months.
5(a)(1)	10	Walkway paving blocks have deteriorated resulting in reinforcing wires sticking up producing a trip-and-fall hazard for employees.	Blocks of concrete used to make walkways are crumbling and the otherwise external wire can trip an employee.	Replace crumbling blocks with new blocks.
5(a)(1)	1	Two liquid nitrogen tanks marked TW202, Model LS-160, DOT4L150, had rust covering their top areas including their valves, exposing employees to a potential leak of nitrogen which could result in an oxygen deficient	Two liquid nitrogen tanks marked TW202, Model LS-160, DOT4L150 rusted.	Inspect all nitrogen tanks and test them to assure that they are properly maintained. Remove the rust from the nitrogen tanks and inspect for deterioration.
5(a)(1)	12	1 1/2 ton chain hoists were mounted to T panels without engineer approval.		Obtain certification from a registered engineer.
5(a)(1)	3	The vent lines from the dryers to the outside are not cleaned on a regular basis to prevent the build-up of lint, which is a fire hazard.	Maintenance department thought the outside vendor cleaned the lines. The vendor thought that his responsibility stopped at machine and that maintenance cleaned the lines.	Add vent line cleaning to preventative maintenance
5(a)(1)	2	The emergency stop switch is not adequate in that the buttons are recessed and not easily accessible.	Two 2 - button boxes with a Start & Stop Button was used as an emergency stop.	Install emergency buttons that are not recessed and that are accessible.
5(a)(1)	1	The tray return conveyor had a minimum of emergency stops.	AUTEC Industries has two E stops that are not in reach of operations.	Install an additional "E" stop along the conveyor.
5(a)(1)	1	The hydraulic hoist was not opening properly because it was getting stuck.	The locking pipe was not in operation.	Replace or repair the locking device
5(a)(1)	1	The front panel was torn loose from gas pump # 4, creating a potential for cuts and creating a possible ignition	The panel measured 3.5X3.5 inches.	Purchase a new panel and install it.
5(a)(1)	3	The freight elevators in Bldg. 200 should be used to haul freight and not passengers because they do not meet current ANSI A-17.1 codes.	The freight elevators in Bldg. 200 date back to 1948-1950. These elevators do not meet the current ANSI A-17 code according to the consultant who inspects them but are in good shape. The Building Operations manager agreed that these elevators should be used as freight and not passenger elevators.	Enforce a policy to use elevators for freight and not passenger usage or upgrade elevators to current standards.
5(a)(1)	1	The safety latches on the two chain hoists were defective (bent).		Repair the safety latches.

5(a)(1)	2	Liquid nitrogen tanks are used and stored in areas without adequate ventilation or oxygen sensors to protect employees from asphyxiation due to oxygen displacement when the tanks discharge nitrogen when overpressured.		Move tanks to safer location
5(a)(1)	1	There were no records documenting that gloves used for protection against electrical shock had been tested in accordance with ANSI standards.	Salisbury/North Gloves: Data included: Glass 00, Ansi/ASTM, SN F5478, may use under 500V.	Set up a testing program and maintain records as required by ANSI standards.
5(a)(1)	1	Electrical protective gloves had not been tested since 1998.	Gloves manufactured by Salisbury/North. Data included: Glass 00, Max use-under 500 V, SN F5478.	Test the gloves in accordance with ANSI standards.
5(a)(1)	25	Emergency showers were not located 84 inches from the point where the person stands to the base of the shower heads at the following locations: A-134, A-186, B-113, C-114, D-174, D-182, D-190, E-106, E-134, E-162, E-174, E-182, E-190, F-102, F-110, F-114, F-122, F-130, F-138, F-142, F-158, F-166, F-174, F-182, F-186. Reference ANSI A358.1, 1998.	NOTE: Emergency showers in E-182 and E-190 are 10 feet above the floor level with chilled water or other piping running under them.	Many laboratories already have lowered the showers to 84 inches; this will represent a significant expense.
5(a)(1)	1	The access ladder to the overhead crane was damaged in that 4 rungs had been cut off so the 20' rule would not take		Replace missing rungs and install safety climbing device or cage.
5(a)(1)	1	Employees opening the Dynamitron accelerator door were exposed to crushing injuries.	The door operates in an east to west direction.	Install stops on rail door slides.
5(a)(1)	1	Employees accessing the crane/crane cab are exposed to the live conductors located less than 7 feet above the platform. Reference ANSI B30.17		Guard the conductors above the platform to protect employees from accidental contact.
5(a)(1)	4	Maintenance workers were exposed to falls from the roof area while servicing equipment.	The fall potential was in excess of 15 feet.	Install restraint devices, or require fall protection while working on a roof area.
5(a)(1)	1	The elevator was not operational in that the door would not open once closed.	The employer stated that the elevator has been repaired several times, but it continues to break down.	Have the elevator inspector and repair person correct all problems with the elevator discovered during inspection.
5(a)(1)	1	A compressed gas cylinder with 20% fluorine and 80% argon is used in the lab. There are no provisions for monitoring fluorine gas in the lab and fittings are not appropriate for fluorine use.	Cylinder is not stored in hood. A polymer tube is connected to the regulator.	1. Store the cylinder in hood or ventilated gas cabinet. 2. Use 316 or 316L stainless steel tubing with welded seams for all connections. 3. Install a fluorine gas monitoring system in the lab. 4. Install a system to purge the lines after use. 5. Verify that the regulator is appropriate for corrosive gas use. 6. Place a flow restrictor on the cylinder (recommend using a 0.01 inch diameter orifice). 7. Label gas lines so that they are identifiable from all viewing angles.

5(a)(1)	1	Roller chains on the Dynamitron door track were not guarded.	A rail sweep would prevent foot injuries.	Install a rail sweep.
5(a)(1)	1	Access ladder to overhead crane was damaged in that 4 rungs had been cut off so the 20-foot rule would not take	Fall of 20-foot plus to concrete below; 4 rungs had been cut off so the 20 foot plus rule did not take effect. Employees had to stretched to reach bridge.	Replace the fixed ladder with a safety climbing device or cage.
5(a)(1)	1	The door entrance at the F wing had a step down that was greater than 13 inches.	The step was 13" from door to floor.	Install a step at 6 1/2 inches to prevent falls.
5(a)(1)	1	The safety latches on the hook of the 50 ton Conco crane were defective.		Repair the safety latches.
5(a)(1)	1	The shop built spreader bar lifting device to move Cryostats was not certified by a professional engineer.. Reference ANSI B30.20		Have the spreader inspected and certified by a professional engineer.
5(a)(1)	1	The laboratory has been closed due to Cadmium 109 and Calcium 45 contamination and has not been cleaned.		Clean room
5(a)(1)	1	The shop built spreader bar lifting device to move the Cryostats was not marked with its rated capacity. Reference ANSI B30.20.		Have it certified and rated by a professional engineer. Have the rated capacity tagged or marked on the lifting device.

Recommendations

Standard	Instances	Hazard Description	Comments;/Measurements	Recommended Abatement
Recommendation	1	The elbow on the steam pipe had been damaged by boxes in storage.		Repair the elbow. Discontinue storing boxes at the elbow.
Recommendation	1	The waste laser dye contained in a 5 gallon plastic container was not entered into the log book and schedule for removal. Reference 1910.1450 Appendix A (D)(11)(d)	Waste laser dye in a 5 gallon container #9 had been in the area since 1998 and had not been entered into the log book for removal.	Update the log book when a container is scheduled for removal.
Recommendation	1	These corridors are a dedicated egress path. The corridors are also used as transport air plenums to supply make-up air to laboratory hoods.	All three of the national building codes have disallowed use of an egress corridor as a transport air plenum since 1978. A fire in an office(s) would fill the corridors with smoke and block egress.	Comply with the current building codes by ducting the hood make-up air directly into the laboratories. The authority having jurisdiction for life safety on ANL site may allow smoke/fire dampers in all corridor penetrations or shutdown of air handlers upon detection of smoke in facility.
Recommendation	1	Secondary containers in the laboratory were not labeled. Secondary containers of deionized water were not labeled. Reference 1910.1450 Appendix A		Label all secondary containers.
Recommendation	1	Toxic chemicals stored under the acid dissolution hoods were not in unbreakable secondary containers. Reference 1910.1450 Appendix A (D)(2)(b).	3 cardboard boxes of urine - not in unbreakable secondary containers - under dissolution hoods	Follow the ANL-E protocol and use unbreakable secondary containers as per SOP.

Recommendation	1	Calcium gluconate gel was not available for diluting hydrogen fluoride used in silicate etching.	Dilute from 48% to 10%	Corrected
Recommendation	1	Sash height requirements for hoods were not adequately visible.		Use visible label (e.g. arrow) to signify sash height. Use Prudent Practices for Handling Hazardous Chemicals in Laboratories.
Recommendation	1	A small cylinder of hydrogen sulfide gas stored in the closet/general storage room could leak and result in a potential flammable atmosphere or potential exposure to employees.	The cylinder is between 12"-18" tall and stored with combustible material.	Remove the cylinder to a compressed gas cylinder storage area.
Recommendation	1	Lead solder was used for electronic repair and initial monitoring had been performed for potential lead exposure, however; the results weren't made known to the exposed employees.	Initial monitoring for potential lead exposure was conducted in the area where lead solder was use. The results of the monitoring were not made known to the employees.	Perform a new initial monitoring for lead, especially on the work surfaces. Where feasible, replace the lead based solder with solder that doesn't contain lead.
Recommendation	1	Sash height requirements for hoods were not adequately visible (See "Prudent Practices for Handling Hazardous Chemicals in Laboratories" cited in 1910.1450, Appendix	Pencil mark was used to denote proper maximum sash height to establish adequate hood face velocity.	Use visible label (e.g. arrow) to signify sash height.
Recommendation	1	The corridors are dedicated egress paths. The corridors are also used as transport air plenums. The return air from each office uses the corridor as a path back to the central air handler.	All three national building codes have disallowed use of egress corridor as transport air plenums since 1978. Fire in offices would fill corridors with smoke and block	Comply with current building codes by ducting return air paths through egress corridors. The authority having jurisdiction for Life Safety on ANL site may allow smoke/fire dampers in all corridor penetrations or shut-down of air-handler upon detection of smoke in the facility.
Recommendation	1	A bottle labeled as Tetrahydrofuran in the waste accumulation area was dated 1993. There was no indication of peroxide tests being performed. There was no record found of the material in the waste log book.		Dispose of the waste tetrahydrofuran through proper disposal channels without further delay.
Recommendation	5	Employees were not protected against the hazards of silica, talc and mica dust hazards when mixing dry joint compound or cutting Durock cement board.	These compounds contain dusts of serious inhalation hazards. Procedures listed on the MSDS's need to be enforced as a standard operating procedure.	Enforce the use of PPE (respirators) when mixing dry joint compound or cutting cement board.
Recommendation	2	The periodic calibration of hydrogen sulfide monitors is not documented for the monitors in the cabinet and in the vac frame.	Researcher said that the monitors are calibrated bi-annually per the manufacturers instructions. The VAC frame "pilot" operation is shut down by the tripping of the alarm.	Document the calibration of the two hydrogen sulfide monitors.
Recommendation	1	Steam pressure vessels may corrode resulting in leaks which may expose workers to live steam.	There are many steam pressure vessels throughout the plant (e.g., drums, tubes, deaerator, etc.,) designed for working pressures between 35 and 200 psig. Predictive maintenance of pressure vessels typically includes non-destructive testing to determine remaining wall thickness of vessels. This "safety" information may also be used	Perform predictive maintenance of steam pressure vessels such as non-destructive testing to determine remaining wall thickness of vessels.

Recommendation	1	Lab ventilation hood 158-1 was not in proper maintenance and operating condition.	to determine remaining useful life of the pressure vessel. Hood 158-1 broken glass; air flow below 100 LF/min; hole in side.	Follow ANL-E and OSHA 1910.1450 guidelines and conduct periodic appraisals and maintenance when operating conditions become inadequate.
Recommendation	1	A carbon monoxide monitor was not provided in the laboratory where a container of 99% carbon monoxide was stored and used,	The carbon monoxide is used in a variety of experiments. It is not used very often. The cylinder is moved from lab to lab.	Store the cylinder in a lab hood or ventilated cabinet. The higher priority recommendation is to obtain a carbon monoxide monitor and place it near the process when an experiment is in progress.
Recommendation	9	Seven containers sulfuric acid, sodium/water solution, and a mixture of hydrogen peroxide were not labeled according to ANL-E policy.		Follow ANL-E policy and label all containers which have chemicals.
Recommendation	1	Sash height requirements for the hood were not adequately visible (see "Prudent Practices for handling Hazardous Chemicals in Laboratories" cited in 1910.14502, App. A).	Pencil mark was used to denote proper maximum sash height to establish adequate hood face velocity.	Use a visible label (e.g., arrow) to signify sash height.
Recommendation	1	Flammable and combustible paints were not stored in approved storage cabinets.	4 cans of Krylon paint stored in metal locker.	Follow ANL-E protocol & guidelines and move the paint to the approved storage cabinet.
Recommendation	2	Secondary containers of hazardous chemicals were not adequately labeled. Secondary containers of sulfuric acid and hydrochloric acid did not have hazard ratings on containers. These were located in a fume hood. Secondary containers of acetone had no hazard rating on the label. This laboratory is under construction, and these chemicals are in permanent storage in the hood. A separate violation was written for those containers.	None	Label secondary containers.
Recommendation	1	Sash height requirements for the hood were not adequately visible (see "Prudent Practices for handling Hazardous Chemicals in Laboratories" cited in 1910.14502, App. A).	Pencil mark was used to denote proper maximum sash height to establish adequate hood face velocity.	Use a visible label (e.g., arrow) to signify sash height.
Recommendation	3	Secondary containers were not labeled as to their contents. Dye solutions in secondary containers were stored in a fume hood. Solutions are methanol-based and not labeled as containing methanol. Rating numbers are not included in the NFPA diamond. Recommendation is based on 1910.1450 Appendix A (non-mandatory) E.I.J.	None	Put contents and hazard ratings on secondary containers (not required by the lab standard but recommended).
Recommendation	1	Two secondary containers of acetone in a glove box were not labeled according to ANL-E policy.	2 acetone containers in glove box.	Completed.

Recommendation	1	Secondary containers were not adequately labeled. One Nalgene bottle in flammable liquid storage did not have a label. The NFPA diamond was not filled in, and the name was faded. Recommendation is based on 1910.1450 Appendix A (non-mandatory) E.I.J.	None	Label secondary containers with the name of the chemical and hazard ratings.
Recommendation	2	Highly toxic chemicals whose containers were opened were not stored in an unbreakable secondary container in the heterogeneous catalysis group enclosed hood.	The heterogeneous catalysis group hood - used to remove sulfur from diesel fuel - 2-2N NaCH bottles not in secondary containers.	Place the items in secondary containers.
Recommendation	1	These corridors are a dedicated egress path. The corridors are also used as transport air plenums to supply make-up air to laboratory hoods.	All three of the national building codes have disallowed use of an egress corridor as a transport air plenum since 1978. A fire in an office(s) would fill the corridors with smoke and block egress.	Comply with the current building codes by ducting the hood make-up air directly into the laboratories. The authority having jurisdiction for life safety on ANL site may allow smoke/fire dampers in all corridor penetrations or shutdown of air handlers upon detection of smoke in facility.
Recommendation	1	Iron pentacarbonyl is stored improperly labeled and not stored in a refrigerator, in that; it was stored in a hood.	Unopened can is badly corroded.	Dispose of the chemical using the proper storage procedures and channels. Store the chemical properly in the interim.
Recommendation	3	Three cans of metal plating solution were not labeled according to ANL-E policy.	3 cans of metal plating solution.	Follow ANL-E policy and label all containers which have chemicals.
Recommendation	1	Label the flammable storage cabinet that is used to store Chloroform with "Danger-Cancer Causing Agent" per Argonne procedures and 29CFR1910.1450, Appendix A.	The container of Chloroform was properly labeled and stored in a Flammable Storage Cabinet. Argonne's procedures require that the cabinet also be labeled "Danger-Cancer Causing Agent". 29CFR1910.1450, Appendix A requires that all labeling be applied.	Attach a label to the flammable storage cabinet used to store Chloroform with the wording "Danger-Cancer Causing Agent".
Recommendation	1	The A102 Laser Laboratory contained food and drink in violation of ANL-E regulations. Reference non mandatory appendix 1910.1450 Appendix A (E)(1)(d).	The Laser Laboratory contained a refrigerator with food and drink even though prohibited by ANL-E	Remove the food, drink, and refrigerator. The situation was abated.
Recommendation	2	Piping carrying highly toxic material was not labeled. Gaseous chlorine and fluorine lines to the dose reactor and to feed lasers, respectively, were not labeled. There are 2 gas cabinets in the lab. Recommendation is based on 1910.1450 Appendix A (non-mandatory) E.I.J.		Label the lines at a minimum near the cabinet, near endpoints, and at all fittings.
Recommendation	1	The north frame vacuum hood was not in proper maintenance and operation condition in that the glass was		Repair the glass.

Recommendation	1	The 35 ton crane needs either a remote unit to control the crane, or an additional access point for the crane. Congestion in the shop makes moving the crane very difficult due to having to raise and lower the large pendent control box over various equipment, pipes, fences, etc. Employees had to use ladders and other devices to get the pendent controls over the equipment. Regular monthly inspections of equipment on the bridge were not being done due to the issue of not having reasonable access to the crane.		Use a remote control unit that allows employees to easily run the crane to the access area or add additional accesses towards the center of the work area.
Recommendation	1	Stainless steel welding operations had not been monitored for potential over exposure to nickel or chromium.	No personal sampling had been conducted on the welding operation where stainless steel was welded.	Take personal air samples for nickel and chromium in all stainless steel welding operations.
Recommendation	1	Label the flammable storage cabinet that is used to store Acrylamide with "Danger-Cancer Causing Agent" per Argonne procedures and 29CFR1910.1450, Appendix A.	The container of Acrylamide was properly labeled and stored in a Flammable Storage Cabinet. Argonne's procedures require that the cabinet also be labeled "Danger-Cancer Causing Agent". 29CFR1910.1450, Appendix A requires that all labeling be applied.	Attach a label to the flammable storage cabinet used to store Acrylamide with the wording "Danger-Cancer Causing Agent".
Recommendation	1	These corridors are a dedicated egress path. The corridors are also used as transport air plenums to supply make-up air to laboratory hoods.	All three of the national building codes have disallowed use of an egress corridor as a transport air plenum since 1978. A fire in an office(s) would fill the corridors with smoke and block egress.	Comply with the current building codes by ducting the hood make-up air directly into the laboratories. The authority having jurisdiction for life safety on ANL site may allow smoke/fire dampers in all corridor penetrations or shutdown of air handlers upon detection of smoke in facility.
Recommendation	1	A natural gas line feeding a torch was not labeled. Reference 1910.1450 Appendix A		Label the gas line.
Recommendation	1	Secondary containers labeled as containing methanol were not labeled regarding NFPA hazard ratings. Nalgene bottles in the flammable liquids storage cabinet contain dyes in methanol. Hazard rating labels are not marked. The NFPA diamond label is applied to the bottles but ratings were left blank. Recommendation is based on 1910.1450 Appendix A (Non-mandatory) E.I.J.	None	Include the NFPA rating values on the NFPA diamond.
Recommendation	1	These corridors are a dedicated egress path. The corridors are also used as transport air plenums to supply make-up air to laboratory hoods.	All three of the national building codes have disallowed use of an egress corridor as a transport air plenum since 1978. A fire in an office(s) would fill the corridors with smoke and block egress.	Comply with the current building codes by ducting the hood make-up air directly into the laboratories. The authority having jurisdiction for life safety on ANL site may allow smoke/fire dampers in all corridor penetrations or shutdown of air handlers upon detection of smoke in facility.

Recommendation	1	Bags of radioactive waste were positioned partially outside of the boundary.	1910.1096 does not include contamination areas as ones requiring posting.	ANL personnel repositioned the bags so they were completely within the boundary.
Recommendation	1	Barrels are used to store unlabeled transformers which may have PCBs.		Wipe sample for PCBs.
Recommendation	2	Chemicals that had been opened were not stored in secondary containers located in the Hererogeneous Catalysis Group hood.	2 containers of 2-N NaCH not in secondary containers.	Place stored chemicals in secondary containers.
Recommendation	1	Sash height requirements for the hood were not adequately visible (see "Prudent Practices for handling Hazardous Chemicals in Laboratories" cited in 1910.14502, App. A).	A pencil mark was used to denote proper maximum sash height to establish adequate hood face velocity.	Use a visible label (e.g. arrow) to signify sash height.
Recommendation	1	The lid to the space is not secured. The space is accessed in the parking lot where people may walk.		Secure the lid.
Recommendation	4	Peroxide tests were not done routinely as required by ANL-E EHS Manual.	The researcher has a peroxide test kit (KI) but has not done tests. Appendix A of the ANL-E ESH manual requires peroxide testing of dioxane every 12 months for chemicals in storage.	Perform peroxide tests as required by Appendix A of the ANL-E ESH Manual.
Recommendation	2	Peroxide tests were not performed in accordance with the ANLE EHS manual.	1,4-Dioxane- Peroxide test labeled 2001 in M024 and Tetrahydrofuran in the flammable liquids cabinet showed a test date of 2001 in M026.	Perform peroxide tests in accordance with the ANL-E EHS Manual.
Recommendation	1	Sash height requirement for hood were not adequately visible (see "Prudent Practices for handling hazardous chemicals in laboratory" cited in 1910.1450, A App. A).	Pencil mark was used to denote proper maximum sash height to establish adequate hood face velocity.	Use a visible label (e.g. arrow) to signify sash height.
Recommendation	2	Employees were exposed to nickel, chromium, and niobium during electron beam welding and hydrogen furnace set up and part retrieval were not sampled to determine personal exposures.	Stainless steel being used in these operations (both 3KW and 25KW welding) contains nickel and chromium that employees may be exposed to during set-up and removal of parts.	Perform air sampling during these operation to characterize exposure to carcinogens, taking note of hydrogen flare before sampling the hydrogen furnace operations.
Recommendation	1	Two one-liter bottles of tetrahydrofuran in the monostat hood without blanketing had no labels regarding peroxide	One bottle was labeled 5-10 mg/l peroxide. The other had no label regarding peroxide testing.	Test THF for peroxide content.
Recommendation	8	Coordination of safety and industrial hygiene service for customers (e.g., shops) needs improvement.	Central Shops management needs help in detecting industrial hygiene hazards involving nickel, chromium, cadmium, and other toxic metal operations during grinding and welding.	Yearly IH walk-through of all shops with an emphasis on employee interview to determine exposures to alloy constituents is recommended. Continued coordination of safety personnel with shops is also suggested.

Recommendation	1	The employees were exposed to the potential of a drifting load as the hoisting operation came to a stop.	An M-6 crane and Wright 5-ton crane were being used. The machine group leader was questioned in regards to braking during the hoisting operation. It was demonstrated that the brakes may not apply uniformly and that the hoist may drift. Additionally, the hoist takes time to come to a complete stop. The group leader mentioned that other cranes do not drift. The brake mechanism needs to be checked to verify that the crane manufacturing requirements are followed.	Assure the preventive maintenance program is established on the manufacturer's requirements (ANSI B30.2).
Recommendation	1	The room is a storage room with standing water from outside, has no ventilation, some mold, and a very musty smell. The location almost meets the definition of a confined space, can develop a hazardous atmosphere (wet bio-matter ---> H2S), is not designed for continuous occupancy, and is large enough for employees to enter. It is not a confined space because entry/exit is not limited.		Either remove the door to allow air circulation, or add ventilation.
Recommendation	4	Secondary containers were not labeled.	Approximately 4 liter unlabelled glass secondary containers on bench. Juice container used as secondary chemical container is not labeled.	Assure secondary containers are labeled and prohibit the use of commercial food containers as chemical containers in laboratories.
Recommendation	1	Butyl lithium stored in a ventilation laboratory hood was not stored in a refrigerator as required. Reference 1910.1450 Appendix A (D)(2)(d)	Butyl lithium in storage located in ventilation hood is supposed to be stored in refrigerator.	Place butyl lithium in the chemical refrigerator.
Recommendation	1	Pressure relief valves on autoclaves are not tested/checked when routine maintenance is performed (They are replaced annually.)		Add relief valve checks to all preventive maintenance schedules.
Recommendation	1	The flange on the wheel of the bench grinder did not appear large enough.	No additional notes.	Install a larger flange.
Recommendation	1	The glove box was inadequate in that duct tape was used around the box to close possible openings. Further, no inspection had been conducted.	Regarding rubber gloves.	Inspect and repair any openings and leaks.
Recommendation	1	The electrical panel box was not accessible in that the door was painted and stuck closed.	Scrape off the paint and assure that the door of the panel operates properly.	Remove the paint from the door frame.
Recommendation	1	The latch to an electrical panel was broken.	Repair or replace the latch.	Replace the latch so that the panel can be opened.
Recommendation	1	Outlet M3/C16 was marked as GFCI protected and it was not.	The circuit was tested and traced to the breaker panel and it was determined that it was not GFCI protected. This was listed as a recommendation because the mislabeled outlet was not required to be GFCI protected.	Remove the "GFCI protected" label.

Recommendation	1	Sash height requirements for hood were not adequately visible (See "Prudent Practices for Handling Hazardous Chemicals in Laboratories" cited in Appendix A.)	Pencil mark was used to denote proper maximum sash height to establish adequate hood face velocity.	Use a visible label (e.g. arrow) to signify sash height.
Recommendation	1	Excessive amounts of chemicals and miscellaneous were stored in the two laboratory ventilation hoods and not removed to a storage cabinet. Reference 1910.1450 Appendix A 9 (D)(2)(d).	2 hoods w/ excessive amounts of storage Paul Rickert agreed there is too much stuff in the hood.	Remove all excessive amounts of chemicals and equipment to a storage cabinet.
Recommendation	2	Containers of unknown waste (liquids) had no labeling.		Provide labeling for unknowns. The person/area sending materials to sample prep should label containers with all known information, such as, "waste organics", unknown waste solvent,
Recommendation	1	No calcium gluconate gel was apparent in the lab where hydrofluoric acid was present.	A container labeled "hydrofluoric acid 50% waste" in the hood	Keep calcium gluconate gel in the lab.
Recommendation	1	Lab hood airflow testing was overdue; it had not been performed since March 14, 2002.		Perform required flow testing on the lab hood.
Recommendation	1	There was no sign at the operation indicating the UV hazard for the UV Light source, a 250 µm collimator beam through an optical fiber.	Employees are wearing eye protection, but no skin protection.	1. Review standards for non-ionizing radiation. 2. The unit should be labeled as a UV Hazard.
Recommendation	1	The two laboratory ventilation hoods contained excessive amounts of chemical and miscellaneous storage. Reference 1910.1450 Appendix A (D)(2)(d)	The storage in the 2 ventilations hoods was excessive.	Keep miscellaneous and chemical storage to a minimum or as little as practical.
Recommendation	1	Hydrogen fluoride at a concentration of 49% is used in a hood. Calcium gluconate gel was present inside the hood, which subjected the container to splashing of HF.	The gel was hard to find inside the hood for someone unfamiliar with where it is kept.	Keep calcium gluconate close to the hood but outside the hood in a well labeled location
Recommendation	1	Decon procedures are not established or followed. There is no oil in the secondary containment tray under the bottles of potassium and lithium metals.	None	Determine the source of the leak and correct leaking container. Repackage and cleanup.
Recommendation	1	The insulation around piping in the area had only 1 asbestos label. One of the pipes (not labeled) has begun to lose its encapsulating material.		Perform asbestos testing and reseal as needed.
Recommendation	1	1910.1450 Appendix A - (E)(4)(h) The container was properly labeled as a carcinogen, however, Argonne procedures call for application of a "Danger Cancer Causing Agent" on the flammable storage cabinet. Acrylamide was found in B-270.		Label the flammable storage cabinet.

Recommendation	1	Review fall protection procedures to ensure the employees or contractors who perform maintenance on antennas or satellite dishes do not approach within 6-feet of the edge of the roof without proper fall protection.		Review procedures and policies on fall protection and provide needed training.
Recommendation	1	99.999% carbon monoxide in a compressed gas cylinder was located inside a hood. There were no detection systems and the lines crossing the lab were not labeled.		1. Install and maintain a carbon monoxide detection system in the lab. 2. Label carbon monoxide lines output from the hood, at input and at all connections, if any.
Recommendation	5	Employees were potentially exposed to carcinogens such as arsenic, chromium, and hard wood dust during cutting and sanding operations and exposure monitoring had not been conducted to evaluate the potential exposure to these contaminants.	Carpenter shop employees cut Wolmanized lumber and some walnut finished stock. Both materials were on hand in the shops.	Perform personal air sampling for employees conducting the following tasks: 1) cutting Wolmanized lumber containing arsenic pentoxide and chromium, and 2) cutting walnut wood (hardwood dust carcinogen hazard).
Recommendation	1	Cylinder was not stored 20 feet from combustible material. Oxygen/Acetylene were stored on welding cart with the regulators removed and valve caps in place. This represents improper storage of cylinders.		When not in use the Oxygen/Acetylene should be separated by a distance of at least 20 feet.
Recommendation	1	The miscellaneous storage area of 063 and the stairwell was not provided with an operable overhead lamp.	The storage area was very dark and required a flashlight to see anything in the area.	Replace the broken lamp so as to provide lighting in the area.
Recommendation	1	There is no baseline of exposure data for chemicals in the labs.	Chemicals most commonly encountered in volume were chloroform, acetonitrile, tetrahydrofuran, dioxane, hexane, aldehydes and inorganic acids	Perform industrial hygiene monitoring in the labs to establish an exposure baseline to potentially volatile chemicals.
Recommendation	1	A researcher does not document tests for peroxide done on tetrahydrofuran containers used for HPLC.	THF only requires a test for concentrating the liquid. Routine testing is done, however, considering the possibility of evaporation.	Document testing as required by ANL-E EHS manual.
Recommendation	2	Materials stored in ventilation hoods #121334 and #121335 were not kept to a minimum as recommended in non mandatory appendix 1910.1450 Appendix A (E)(1)(j).	Laboratory ventilation hood #121335 was stored with a cylinder cap, 4 rags, and other materials. Hood #121334 was stored with 4 items of chemical waste.	Remove materials stored in ventilation hoods.
Recommendation	1	There is a germicidal UV source in an ESCO cleanroom hood. There is no label regarding its potential hazard. The the non-ionizing Rad Safety Officer has not reviewed it.	Researcher says it is used only with plexi-glass cover in place.	1. The operation should be reviewed by Non-ionizing Rad Safety Officer. 2. A sign should be posted on the hood indicating a UV hazard and conditions for use (e.g., plexi-glass screen in place).

Recommendation	1	A food container not designed to store peat was found in the chemical refrigerator. Reference 1910.1450, Appendix A (E)(1)(e)	The peat was in a Rubbermaid food container.	The container was removed.
Recommendation	2	Cadmium waste is stored in empty labs. Storage containers are dirty and not well stored.		Perform surface sampling for cadmium.
Recommendation	1	The employee could not adequately determine sash height for safe use of the hood.	A pencil mark was used to denote the tested sash height for adequate hood velocity. See "Prudent Practice for Handling Hazardous Chemicals in Laboratories" cited in Appendix "A" of OSHA Standard 1910.1450	Use a visible label (e.g. arrow) to designate safe sash height.
Recommendation	1	An exhaust hose was lain over a 5% HCL line from a gas cabinet.		Remove the gas hose from the HCl Line and keep objects from being placed on the line.
Recommendation	1	There was one unlabeled secondary container. A wash bottle on the center bench contained an unknown liquid. Reference 1910.1450 (Appendix A)		Label secondary containers.
Recommendation	2	In rooms where more than one type of equipment is coated with encapsulated asbestos, no labels are affixed to the	The service floor pipes wrapped with encapsulated asbestos and marked "remove" in orange paint are not labeled. Large room is posted outside. Room A004 also contains "sprayed" on ceiling asbestos material. Room B102 on first floor contains pipes that may still contain asbestos in pipe chase "Pinch points". The room is posted but it is unlocked.	Label pipes covered with encapsulated asbestos, not just the room in which the pipes run.
Recommendation	1	An ultra-violet light source had not been reviewed by the non-ionizing radiation safety officer and had no signs indicating the presence of ultraviolet light.	The source was 254 nm.	Perform a non-ionizing radiation safety review and label the cabinet as containing a UV source.
Recommendation	1	The existing guardrail system was in place and had a post that was not firmly attached to the concrete floor.	Around the "pit area", which is covered by metal decking when not in use, there is a guardrail system on the sides for when the "pit" is open. The existing posts for the handrails are anchored to the floor. At the one end the handrails are anchored to the floor. At the one end the post was loose. The bolts on the floor needed	Maintenance needs to secure the post by installing additional bolts.
Recommendation	1	Exposed, non-current carrying metal parts of cord and plug-connected equipment that may become energized were not grounded.	A GE toaster oven did not have a ground wire.	Replace with a grounded circuit.
Recommendation	6	Highly toxic chemicals whose containers were opened were not stored in unbreakable secondary containers in the following laboratories as recommended in 1910.1450, Non-mandatory Appendix A, Section (D)(2)(b): E-182, A-186(4 NaOH), D-142(organic waste).		Follow the ANL-E protocol and OSHA's 1910.1450 Appendix A (D)(2)(b) protocol and place the chemical containers in a secondary container.

Recommendation	1	There are 2 doors into the lab on which the signs have conflicting dates as to when the last RAD testing was done.	One sign said tested on 1/28/02 and the other indicated 1/28/03.	Review the records to determine the correct actual test date or perform testing again.
Recommendation	4	Small containers of chemicals were not stored in secondary containment at four locations in the room. Reference 1910.1450 (Appendix A)	There were 32 small vials, e.g. xylene stored on top of MS50 high resolution mass spectrometer. There were 18 sample vials and micro syringe on lab bench opposite mass spec. There were 22 small vials of chemicals, such as pyridine stored on a window sill. There were 8 small sample vials stored on a bookshelf.	Store small vials and samples subject to breakage in secondary containment.