

## Creating a Safe Working Environment in a Metallurgical Laboratory

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Most engineering and scientific businesses that have a metallurgical laboratory have a safety program. The extent of the laboratory safety program is dictated by the size and scope of their activity. However, if the program is not followed by company personnel and visitors, the program is essentially wasted paper sitting on a shelf in a neglected binder.

At Engineering Systems Inc. (ESI), laboratory safety is not just a slogan to be contemplated during safety reviews, but an actual working way of life. Many of the projects that the ESI laboratory deals with are related to safety issues. It is imperative to the company objectives that laboratories are maintained and operated safely.

In addition to creating and keeping a safe environment for employees, the laboratories must be safe for non-technical visitors. Due to the nature of our business, there may be people such as insurance company representatives, lawyers, and/or students in the laboratories. Many of these people may not be aware of the hazards in a lab, especially in the metallurgical laboratory. A clean and safe lab environment will also help minimize errors.

Figure 1 shows part of the metallurgy lab at ESI. Many of our safety procedures are shown here, some of which are:

- Easily accessible fire extinguisher
- Limited quantities of hazardous chemistries, such as acids and bases used for etchants, are stored in cabinets.
- Limited quantities of solvents are in bottles marked with the appropriate NFPA labeling.
- Floor and bench space is free of clutter and inactive samples.
- A functioning vent hood is present and ready for use.
- Laboratory equipment, such as the polishers and low speed cut-off wheels, are at a safe shut-off position.
- Emergency eyewash is marked and easily accessible.
- Additional eyewash solutions (for neutralizing hazardous chemistries) are available.
- Location for the acid spill kit is marked.
- Location for MSDS information is indicated.

It is also important to keep safety and laboratory equipment updated. It is necessary to keep fire extinguishers and eyewash solutions current. Electrical cords are frequently checked for cracks. Plastic and glass bottles should be regularly replaced. Current methods and practices should be used.

Figure 2 (taken from *De Re Metallica*, by Georgius Agricola) is an illustration of an old metallurgy laboratory. It is interesting to note the personal safety equipment of the time.

References

- [1] OSHA Regulation 1910.1450: Occupational Exposure to Hazardous Chemicals in Laboratories
- [2] OSHA regulation 1910.1200: Hazard Communication
- [3] P. E. Hagen, J. F. Montgomery: Accident Prevention Manual, Engineering and Technology, National Safety Council, 2001
- [4] G. Agricola: De Re Metallica, 1556, Translated by H. Hoover, 1912, 1950 Ed.



Figure 1  
Part of the Metallurgy Laboratory at ESI



Figure 2  
OSHA Regulation

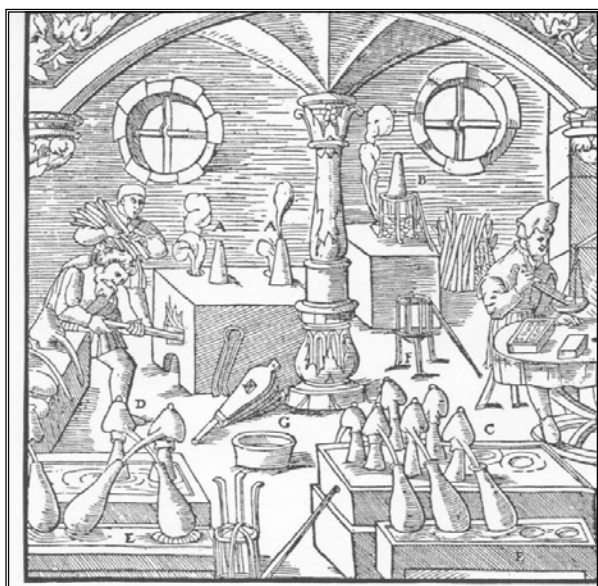


Figure 3  
Old-Time Metallurgy Laboratory



Figure 4  
Emergency Eye-Wash Station