

# Safety Audit in Laboratories of Academic Institution

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**Abstract:** Safety audit is a structured process whereby information is collected relating to the efficiency, effectiveness, and reliability of the total health and safety management system of an institute. Safety audits are conducted in compliance with legislation, and are used as a guide for designing plans for corrective actions within a health and safety program. Safety audit is being performed in an academic institute's major laboratories as Chemical laboratory, Electrical, Machine shop and General Workshop which includes carpentry, smithy, and metal fitting. Basic requirements are being checked through checklists developed and noted the non-conformities in those particular laboratories. Specific recommendations were given to those issues so that to prevent issues to become an accident. The target of safety auditing is to minimize accident level in institute's laboratory. To implementing the all types of safety methods to the students, we need to interpret the findings from auditing results.

## 1. Introduction:

A safety audit examines and determines whether or not a laboratory's daily activities and processes conform to their planned health and safety arrangements as well as government laws. An audit further identifies whether or not the planned arrangements are implemented effectively, and are suitable to achieve academic institute's health and safety policy objectives. Often it is a failure in health and safety management that results in a serious incident. Safety audits assist in identifying failures within a system, process, or program and the information gathered helps to determine the best course of corrective action.

### 1.1 Concepts of Safety Audit

1.1.1. What is mean by auditing? Auditing refers to a systematic and independent examination of procedures, programs and policies which are to be abiding by certain laws. It is an indepth study of identifying the non-conformities in the laboratories. These non-conformities are identified and relevant suggestions are being provided.

1.1.2. Why audit is important? The responsibility of an internal audit is to identify the system flaws, failure to impalement certain conditions which have to be present according to the Health and Safety norms and these are being implemented effectively by auditing. Also, it is a tool for continual improvement for Health and Safety practices as well as conditions in workplace. It is also done to avoid the incurring some of that cost, organization should consider incorporating regular health and audits.

1.1.3. What result you will get after an audit? After the audit, the senior staff and the supervisor of the lab are responsible for reviewing the audit report, asking questions auditors' findings, and evaluating any recommendations before they are presented to the auditor's team in the final report. The insights shared by the auditors should be presented formally and in person



by the auditor to the audit committee at the conclusion of the audit process. However, first there should be a discussion with the audit committee. In addition to acting on suggestions provided by the auditor, the audit committee can also use opportunity of an annual audit to enlist the support of the auditor to undertake new initiatives. If the auditor agrees that initiatives suggested by management may strengthen operations, the auditor may choose to include management’s ideas in the management letter. Management may also identify for auditor areas that may need further, independent validation in order for the audit committee to fully appreciate the ramifications of their decisions.

After all questions have been asked and answered, including confirmations of anything that the auditors needed to check, the final step is that the auditors will sign and date the report, and deliver it to the management with the client representation letter, the same date as the audit report.

During and after the audit, audit committees evaluate the auditors’ performance and recommended to the management whether to retain the same firm for next year’s audit or engage a new one. Therefore, it is imperative that the audit committee is diligent in evaluating the auditors. The audit committee should consider a number of questions about its relationship with the independent auditor and should also engage the non-profit’s key executives for their comments.

## 2. Methodology

2.1 Checklist Analysis: The purpose of a checklist analysis is to identify hazards, consider the general types of incidents that can occur in a process or activity in a qualitative fashion the effects of these incidents, and determine whether the safeguards against these potential incident situations appear adequate.

2.2 Preparation of Checklist: The initial step is being to prepare a checklist which comprises the basic needs of the laboratory which has to be satisfied in terms of safety norms. Therefore, each workplace is being inspected carefully and studied the process. After getting the knowledge about the process, the questions or the basic requirements were fed into the checklists. The issues in the checklist were observed clearly in every laboratory. For every laboratory, the most risk arising issue is being identified such as in Chemical laboratory, storage of concentrated Sulphuric acid is prone to most of the incident arising events. The checklist analysis is not only for the identifying the gaps but also for the providing relevant and significant control measures. The control measures were observed clearly in a manner that it could be relevant and liable.

2.3 Checklist based on:

Table 2.1 Conditions on which checklist is being prepared

Topics	Description
Occupational Hygiene	Occupational hygiene uses science and engineering to prevent ill health caused by the environment in which people work. It helps employers and employees to understand the risks and improve working conditions and working practices.

Ventilation	Ventilation is the process of “processing” or replacing air in any space to provide high indoor air quality (i.e. to control temp, replenish oxygen, or remove moisture, odours, smoke, heat, dust, airborne, bacteria and carbon dioxide). Ventilation is used to remove unpleasant smells and excessive moisture, introduce outside air, to keep interior building air circulating, and to prevent stagnation of the interior air.
Housekeeping	Housekeeping refers to the management of duties and chores involved in the running of the household, such as cleaning and house maintenance purposes. These tasks may be performed by any of the household members.
Proper Maintenance	To checking an item of the equipment is operating correctly and to therefore avoiding unscheduled breakdown and downtime
Safety Awareness	Safety awareness is being aware of safety issues, and potential hazards to students and staff members in the workplace.

### 3. Results and Discussions

The audit is being applied to main laboratories and it was observed that in some laboratories the safe level and risk levels are randomly distributed. Accordingly, when safe level of a workplace increases, the risk pertaining in workplace will decrease. Our motive is to implement the same concept. The questions which satisfies the conditions in checklist falls under “positive response” and those questions which are not satisfied they falls under “negative response”, these categories directly imply “safe level” and “risk region” respectively. The total number of responses of each laboratory is being calculated and plotted a graph.

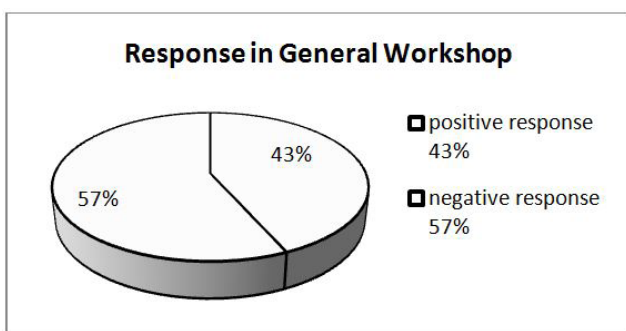


Fig. 3.1 Negative Response in General Workshop

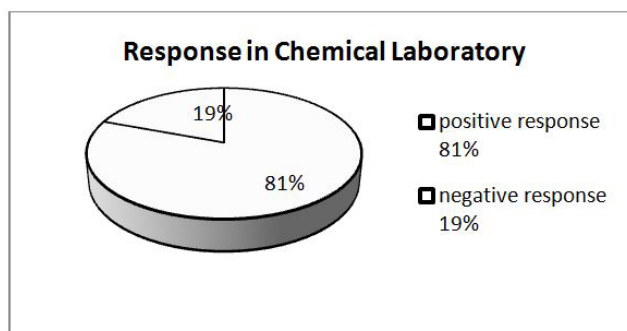


Fig. 3.2 Positive Response in Chemical Laboratory



## 4. Conclusions

The improvement process of maintaining the safety by auditing process gives many problems to look forward. The exact methodology which was applied was the gap analysis in various laboratories. During the checklist analysis, the risks or issues pertaining to were identified and their significant control measures were provided. It can be concluded by stating that these control measures if implemented, the safe climate of working zone for students, workers and staff members could increase in a predominant way.

## 5. References

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