IS 14489 (1998): Code of practice on occupational safety and health audit [CHD 8: Occupational Safety, Health and Chemical Hazards]

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भारतीय मानक

व्यावसायिक सुरक्षा और स्वास्थ्य ऑडिटिंग की रीति संहिता

Indian Standard

CODE OF PRACTICE ON OCCUPATIONAL SAFETY AND HEALTH AUDIT

ICS 13.100

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Price Group 7

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Industrial Safety Sectional Committee had been approved by the Chemical Division Council.

Due to the growing awareness of safety in the industrial sector and introduction of various Acts for implementing directives of the statutory bodies, the need has been felt to formulate this Indian Standard which will give a guideline to audit safety aspects in the industrial and other units of concern.

While formulating this standard, utmost care has been taken to cover all the possible elements relating to safety. A separate checklist giving questionnaires of safety audit has been included and given in Annex C for the benefits of auditor and auditee. However, it may be reviewed from time to time for inclusion of newer elements which would be necessary due to the reasons intended for. A list of records to be maintained is also given in Annex B of this standard as guideline.

This standard only gives a guideline for auditing industrial unit for safety parameters.

The composition of technical committee responsible for formulating this standard is given in Annex D.

Indian Standard

CODE OF PRACTICE ON OCCUPATIONAL SAFETY AND HEALTH AUDIT

1 SCOPE

This standard establishes audit objectives, criteria and practices, and provides guidelines for establishing, planning, conducting and documenting of audits on occupational safety and health systems at workplace.

It provides guidelines for verifying the existence and implementation of elements of occupational safety and health system and for verifying the system's ability to achieve defined safety objectives. It is sufficiently general in nature to permit it to be applicable or adaptable to different kinds of organizations. Each organization should develop its own specific procedures for implementing this standard.

This standard does not cover audit of environmental management system for which a separate Indian Standard IS/ISO14001 is available.

2 DEFINITIONS

For the purpose of this standard, the definitions given below shall apply.

2.1 Auditee

An organization to be audited.

2.2 Audit Team

A team of persons designated as auditors who are suitably qualified and have experience to perform these audits.

NOTE— The auditor designated to lead the audit team and manage a safety audit is called a 'Audit Team Leader' (lead auditor).

2.3 Client

An organization which appoints auditing agency/team to carry out third party audit on its behalf.

2.4 Management Representation

The official of the auditee organization authorized to deal with the audit team.

2.5 Nonconformity

The nonfulfilment of specified requirement.

2.6 Observation

A statement of fact made in the course of an audit and preferably substantiated by objective evidence.

2.7 Objective Evidence

Qualitative or quantitative information, records or statements of fact which is based on observation, measurement or test and which can be verified.

2.8 Occupational Safety and Health Audit

A systematic, objective and documented evaluation of the occupational safety and health systems and procedures.

NOTES

1 Henceforth in this document only the words 'OS&H' shall be used in place of the words 'occupational safety and health' and only 'audit' in place of safety and occupational health audit.

2 The audit typically applies to, but is not limited to, a safety system or elements thereof, and is applicable to process, products, or to services. Such audits are often called 'safety system audit', 'process safety audit', 'product safety audit', 'service safety audit'.

3 There are two types of audits, external and internal. External audits are those carried out by agencies external to the auditee organization. Internal audits are those carried out by the employees designated by the management for this purpose. Such employees may be selected preferably from amongst not having direct responsibility in the areas being audited nor having responsibility for implementation of recommendations.

4 One purpose of the OS&H audit is to identify the areas for improvement or corrective action. An audit should not be confused with 'Periodic Safety Inspection' activities performed by plant personnel for the purpose of checking effectiveness of implementation of Safety System.

2.9 Occupational Safety and Health System

The organizational structure, responsibilities, procedures, processes and resources specified by top management of an organization as required for implementing occupational safety and health objectives.

NOTES

1 The areas to be covered under the OS&H system are given in Annex A.

2 The OS&H system should only be as comprehensive as is needed to meet the objectives.

2.10 Organization

Company, corporation, firm, enterprise or institution or part or combination thereof whether incorporated or not, public or private, that has its own functions and administration.

NOTE — This definition is as per ISO 14001 'Environmental management systems — Specification with guidance for use'.

2.11 Recommendation

Suggestion made by the audit team in the course of audit for improvement in the OS&H system.

NOTES

1 The definition covers the departure or absence of one or more OS&H system elements from specified requirements.

2 For organization with more than one operating unit; a single operating unit may be defined as an organization.

3 AUDIT GOALS, OBJECTIVES AND RESPONSIBILITIES

3.1 Audit Goals

Audits are normally designed to achieve one or more of the following goals:

- to provide the auditee with an opportunity to assess its own OS&H system against a OS&H system standard and identify areas for improvement;
- to determine the conformity of the implemented OS&H system with specified requirements and identify areas for improvement; and
- to meet regulatory requirements.

NOTES

1 These audits may be periodic, or may be prompted by significant changes in the organization's OS&H system, process, product or service or by a need to follow up on corrective action as specified in **4.1.2**.

2 Audits are not aimed at, nor should result in a transfer of the responsibility to achieve safety from auditee management to the auditing organization.

3 Audits are not a certification of the safety performance of the auditee organization.

3.2 Audit Objectives

OS&H audits are conducted with the following objectives:

- To carry out a systematic, critical appraisal of all potential hazards involving personnel, plant, services and operation method; and
- To ensure that OS&H system fully satisfy the legal requirements and those of the company's written safety policies, objectives and progress.

3.3 Roles and Responsibilities

3.3.1 *Auditors*

3.3.1.1 *Audit team*

It is desirable to have the OS&H audit team comprising of two or more auditors; with different specialized backgrounds which are complimentary. One of the auditors should be designated as the lead auditor and should have overall charge and responsibility.

3.3.1.2 *Lead auditor's responsibilities*

The lead auditor is ultimately responsible for all phases of the OS&H audit. The lead auditor should have management capabilities and experience and should be given authority to make final decisions regarding the conduct of the audit and any audit observations.

The lead auditor's responsibilities also cover:

- communicating with client, auditee and other auditors regarding audit requirements;
- selection of other audit team members;
- preparation of the audit plan;
- interacting with the client and auditee's management;
- submitting the audit report; and
- maintaining agreed time schedule.

3.3.1.3 *Auditor's responsibilities*

Auditors are responsible for:

- complying with the applicable audit requirements;
- planning and carrying out assigned responsibilities effectively and efficiently;
- documenting the observations;
- reporting the audit results;
- verifying the effectiveness of corrective actions taken as a result of the earlier audits (if requested by the client);
- retaining and safeguarding documents pertaining to the audit ensuring such documents remain confidential, and treating privileged information with discretion; and
- Cooperating and supporting the lead auditor.

3.3.1.4 *Independence of the auditor*

Auditors should be free from bias and influences which could effect objectivity.

All persons and organizations involved with an audit should respect and support the independence and integrity of the auditors.

3.3.1.5 *Auditor's activities*

The lead auditor should:

- define the requirements of each audit assignment, including selection of team;
- comply with applicable auditing requirements and other appropriate directives;
- plan the audit, prepare working documents and brief the audit team;

— plan the field visit;

— report critical nonconformities to the auditee immediately;

— report any major obstacles encountered in performing the audit; and

— report on the audit results clearly, conclusively and without undue delay.

Auditors should:

— remain within the audit scope;

— exercise objectivity;

— collect and analyse evidence that is relevant and sufficient to permit the drawing of conclusions regarding the audited OS&H safety system;

— remain alert to any indications of evidence that can influence the audit results and possibly require more extensive auditing;

— be able to answer such questions as presented;

— ensure that the procedures, documents and other information specifying requirements describing or supporting the required elements of the OS&H system are known, available, understood and used by the auditee's personnel?

— ensure that all the documents and other information used to describe the safety system adequate to achieve the required OS&H objectives? and

— act in an ethical manner at all times.

3.3.2 *Client*

The client:

— determines the need for and the purpose of the OS&H audit and initiate the process;

— selects the auditing organization;

— agrees in consultation with the lead auditors the general scope of the audit such as what OS&H system standard or document is to be selected as reference and the time schedule;

— receives the audit report; and

— determines what follow-up action is to be taken.

3.3.3 *Auditee*

The auditee's management should:

— inform relevant officials and staff about the objectives and scope of the audit;

— appoint one or two officials to coordinate/ liasion with audit team and responsible officials to accompany members of the audit team during their visit to respective departments;

— provide all resources needed for the audit team in order to ensure an effective and efficient audit process;

— provide access to the facilities and evidential material as requested by the auditors;

— co-operate with the auditors to facilitate achievements of audit objectives; and

— determine and initiate corrective actions based on the audit report.

4 AUDITING METHODOLOGY

4.1 Initiating the OS&H Audit

4.1.1 *Audit Scope*

The client in consultation with lead auditor makes the final decisions on which OS&H system elements, physical locations and organizational activities are to be audited within a specified time frame.

The scope and depth of the audit should be designed to meet the client's specific information needs.

The standards or documents with which the auditee's OS&H system is required to comply should be specified by the client. This may include the relevant legal requirements; concerned and other relevant Indian Standard and the requirements specified by the auditee (*see* **4.1.3**).

Sufficient objective evidence should be available to demonstrate the operation and effectiveness of the auditee's safety system.

The resources committed to the audit should be sufficient to meet its intended scope and depth. The audit will cover the objectives laid down and may also contact with individual workers to ascertain their perceptions about the existing OS&H system, to gain their involvement, to encourage comments and suggestion relating to safety and invite cooperation to bring the company to an approved OS&H standard.

4.1.2 *Audit Frequency*

The need to perform an audit is determined by the client, taking into account of specified or regulatory requirements and any other pertinent factors. Significant changes in management, organization, policy, techniques or technologies that could affect the OS&H system, or changes to the system itself and the results of recent previous audits, are typical of the circumstances to be considered when deciding audit frequency.

It is desirable that organizations have a combination of external and internal OS&H audit system. While the external audit in respect of organizations may be

conducted once in two years, or as specified by any statute, the frequency of internal audit may be set once in every year. Records of accidents and dangerous occurrences should be examined and used to identify high risk areas and activities and consequently the frequency of internal audit may be increased.

4.1.3 Preliminary review of auditee's description and specified requirement of OS&H system:

As a basis for planning the OS&H audit, the lead auditor should review for adequacy the auditee's specified requirements and recorded description of the methods for meeting the OS&H system requirements (such as the safety manual or equivalent).

If this review reveals that the system described by the auditee is not adequate to meet the requirements, further resources should not be expanded on the audit until such concerns are resolved to the satisfaction of the client, the lead auditor and, where applicable, the auditee.

While it is desirable to have a well defined set of specified requirements and recorded description; in their absence; audit may be conducted with reference to legal requirements and concerned Indian Standards.

4.2 Preparing the OS&H Audit

4.2.1 *Audit Plan*

The audit plan should be finalized after consultation with lead auditor and the client and communicated to the auditors and auditee.

The audit plan should be designed to be flexible in order to permit changes in emphasis based on information gathered during the audit, and to permit effective use of resources. The plan should include:

- the audit objectives and scope;
- identification of reference documents (such as the applicable OS&H system standard and the auditee's description and specified requirements of their safety system);
- size of the audit team as specified at **3.3.1.1**;
- identification of the organizational units to be audited;
- the schedule for audit activities;
- the schedule of meetings to be held with auditee management;
- the list of documents to be pursued by the audit team;
- audit report distribution and the expected date of issue.

4.2.2 *Audit Team Assignments*

Each auditor should be assigned specific OS&H system elements or functional departments to audit. Such assignments should be made in consultation with the auditors concerned.

4.2.3 *Working Documents of the Audit Team*

The documents required to facilitate the auditor's investigations, and to document and report results, may include:

- check-lists used for evaluating OS&H system elements (normally prepared by the auditor assigned to audit that specific element), and
- forms for documenting supporting evidence for conclusions reached by the auditors.

Working documents should be designed so that they do not restrict additional audit activities or investigations which may become necessary as a result of information gathered during the audit.

Working documents involving confidential or proprietary information shall be suitably safeguarded by the auditing organization.

4.2.4 *Questionnaire of Preliminary Information*

The audit team would send to the auditee management a questionnaire seeking information about various elements of OS&H system as given in Annex A. This would be filled in by the auditee, plan and returned for study by the audit team before the field visit.

4.3 Executing the OS&H Audit

This would include a field visit with the auditee organization by the audit team which would cover the following activities. During this field visit, the concerned officials of the auditee would accompany the team during their visits around the plant.

4.3.1 *Opening Meeting*

The purpose of an opening meeting is to:

- introduce the members of the audit team to the auditee's senior management;
- review the scope and the objectives of the audit;
- provide a short summary of the methods and procedures to be used to conduct the audit;
- establish the official communication links between the audit team and the auditee;
- confirm that the resources and facilities needed by the audit team are available;
- fix a schedule of visits to individual plants/ departments;

— discuss the auditee's senior management; the areas of concerned and suggested areas of focus by the audit team;

— confirm the time and date for the closing meeting and any interim meetings of the audit team and the auditee's senior management;

— clarify any unclear details of the audit plan.

4.3.2 Presentation by auditee management on organization, manufacturing processes; organization structure and specified requirements of the OS&H system.

4.3.3 *Examination*

4.3.3.1 *Collecting evidence*

Evidence should be collected through interviews, examination of documents, and observation of activities and conditions in the areas of concern. Clues suggesting nonconformities should be noted if they seem significant, even though not covered by check-lists, and should be investigated. Information gathered through interviews should be tested by acquiring the same information from other independent sources, such as physical observation, measurements and records (*see* Annex B).

NOTE — A questionnaire for performing safety audit has been given in Annex C for guidance only.

4.3.3.2 *Audit observations*

All audit observations should be documented. After all activities have been audited, the audit team should review all of their observations to determine which are to be reported as nonconformities. The audit team should then ensure that these are documented in a clear, concise manner and are supported by evidence. Nonconformities should be identified in terms of the specific requirements of the standard or other related documents against which the audit has been conducted. Observations should be reviewed by the lead auditor with the responsible auditee manager. All observations of nonconformities should be intimated to the auditee and acknowledged by it.

It should be remembered that purpose of audit is not to comprehensively check implementation of each safety system element. The purpose is to sample/test check the implementation of each element of the OS&H system. Therefore, the information is to be corrected for a few cases of nonconformity in respect of each element; as a basis for evaluating implementation of that element. However, recommendations are not only to correct the observed nonconformities, but the implementation of the element as a whole.

4.3.4 *Audit Recommendations*

The desired end result of a OS&H audit is the identification of primarily unrecognized hazards, in the light of experience and early recognition of short comings in the areas such as the maintenance and testing of critical equipment. The auditor should make recommendations to the auditee for the improvements to the OS&H system.

In case of an organization whose OS&H system specified requirements/description are well developed; it would be sufficient to point out nonconformities with the requirement. However, when these are not well laid down, it becomes all the more important to make recommendations.

These recommendations are of two types:

— for improvement in the system's specified requirements; and

— for more effective implementation of the specified requirements of the system.

It is up to the auditee to determine the extent, the way and means of actions to improve the OS&H system as per recommendations of the audit team. However, the recommendations regarding compliance with statutory and legal requirements are to be fully implemented.

4.3.5 *Closing Meeting with Auditee*

At the end of the OS&H audit, prior to preparing the audit report, the audit team should hold a meeting with the auditee's senior management and those responsible for the functions concerned. The main purpose of this meeting is to present audit observations and recommendations to the senior management in such a manner so as to ensure that they clearly understand the results of the audit.

The lead auditor should present observations and recommendations, taking into account their perceived significance.

The lead auditor should present the audit team's conclusions regarding the OS&H system's effectiveness in ensuring that objectives will be met.

Records of the closing meeting should be kept.

4.4 OS&H Audit Documents

4.4.1 *Audit Report Preparation*

The audit report is prepared under the direction of the lead auditor, who is responsible for its accuracy and completeness.

4.4.2 *Report Content*

The audit report should faithfully reflect both the tone and content of the audit. It should be dated and signed by the lead auditor. It should contain the following items, as applicable :

— An executive summary of the report presenting introduction, objectives and methodology, overview of the site, plant description, management's OS&H system, worker's

perception of management's commitment towards safety and the major conclusions and recommendations;

- the scope and objectives of the audit;
- details of the audit methodology, the identification of audit team members and auditee's representative, audit dates;
- identification of the reference documents against which the audit was conducted (safety system standard, auditee's safety manual, etc);
- observations of nonconformities as well as good practices;
- audit team's judgement of the extent of the auditee's compliance with the applicable OS&H system standard and related documentation;
- the system's ability to achieve defined objectives; and
- the recommendations for improvement.

4.4.3 *Report Distribution*

The OS&H audit report should be sent to the client signed by the lead auditor. Any additional distribution should be determined by the client. Audit reports containing confidential or proprietary information shall be suitably safeguarded by the auditing organization and the client.

The audit report should be issued as soon as possible. If it cannot be issued within agreed time period, the reasons for the delay should be given to the auditee and a revised issue date established.

4.4.4 *Record Retention*

Audit documents should be retained by agreement between the client, the auditing organization and auditee, and in accordance with any regulatory requirements.

5 OS&H AUDIT COMPLETION

The audit is completed upon submission of the audit report to the client.

6 ACTION FOR IMPLEMENTATION OF OS&H AUDIT REPORT

The auditee is responsible for determining and initiating corrective action needed to correct a nonconformity or to correct the cause of a nonconformity. The auditor is only responsible for identifying the nonconformity.

The auditee should prepare an action plan for implementation of audit report; specifying action by concerned departments and time limits for action. This may be in consultation with the auditing organization. One of the most important follow-up actions is the communication to appropriate personnel in the auditee organization of the substance of the audit report, the agreed recommendations for action and, where no action is agreed (although it may have been recommended in the course of the audit) the reasons for this decision.

If needed, the auditing organization can be engaged to do a follow-up audit reviewing implementation of recommendations.

NOTE — The auditing organization should keep the client informed of the status of corrective action activities as found by the follow-up audit. After verification of corrective action implementation, the auditing organization may prepare a follow-up report and distribute it in a manner similar to the original audit report.

ANNEX A

(*Clauses* 2.1 *and* 4.2.4)

ELEMENTS OF OCCUPATIONAL SAFETY AND HEALTH SYSTEM (OS&H)

1. Occupational safety & health policy
2. OS&H organizational set-up
3. Education and training
4. Employees participation in OS&H Management
5. Motivational and promotional measures for OS&H
6. Safety manual and rules
7. Compliance with statutory requirements
8. New equipment review/inspection
9. Accident reporting analysis investigation and implementation of recommendations
10. Risk assessment including hazard identification
11. Safety inspections
12. Health and safety improvement plan/targets
13. First aid facilities — occupational health centre
14. Personal protective equipment
15. Good housekeeping
16. Machine and general area guarding
17. Material handling equipment
18. Electrical and personal safeguarding
19. Ventilation, illumination and noise
20. Work environment monitoring system
21. Prevention of occupational diseases including periodic medical examination
22. Safe operating procedures
23. Work permit systems
24. Fire prevention, protection and fighting systems
25. Emergency preparedness plans (on-site/off-site)
26. Process/plant modification procedure
27. Transportation of hazardous substances
28. Hazardous waste treatment and disposal
29. Safety in storage and warehousing
30. Contractor safety systems
31. Safety for customers (including material safety data sheets)

ANNEX B

(*Clause* 4.3.3.1)

TYPES OF RECORDS TO BE EXAMINED DURING THE SAFETY AUDIT

1. OS&H policy
2. Safety organization chart
3. Training records on safety fire and first-aid
4. Record of plant safety inspections
5. Accident investigation reports
6. Accidents and dangerous occurrences — statistics and analysis
7. Record of tests and examinations of equipment and structures as per statutes
8. Safe operating procedures for various operations
9. Record of work permits
10. Record of monitoring of flammable and explosives substances at work place
11. Maintenance and testing records of fire detection and fire fighting equipment
12. Medical records of employees
13. Records of industrial hygiene surveys (noise, ventilation and levels, illumination levels, airborne and toxic substances, explosive gases)
14. Material safety data sheets
15. On-site emergency plans and record of Mock Drills
16. Records of waste disposal
17. Records of effluent discharges to the environment
18. Housekeeping inspection records
19. Minutes of safety committee meetings
20. Approval of layouts; and other approval from statutory authorities
21. Records of any modifications carried out in plant or process
22. Maintenance procedure records
23. Calibration and testing records
24. Shut down maintenance procedures
25. In service inspection manuals, records including that of material handling
26. Safety budget
27. Inspection books and other statutory records
28. Records of previous audits
29. Safety in transportation of hazardous substances

ANNEX C

(*Clause* 4.3.3.1)

SAFETY AUDIT QUESTIONNAIRE

HEALTH AND SAFETY POLICY

1. Does the organization has a health and safety policy?
   (if yes, please attach one copy)
2. Do you have any corporate safety policy ?
   (if yes, please attach one copy)
3. Who has signed the health safety policy ?
   (indicate his position)
4. Whether it is prepared as per guidelines of the statutory provisions ?
5. When was the safety policy declared and adopted ?
6. How many times it has been updated till now ?
7. Whether the policy is made know to all ?
8. Whether the safety policy was scrutinized by outside expert agency ?
9. What was the last date of updation ?
10. Does it find a place in the annual report ?

SAFETY & HEALTH ORGANIZATION

(A) Safety Department

11. Does the factory has a safety department ?
12. If yes, furnish the following information :
    i) Head of the safety department:
       a) Name
       b) Designation
       c) Qualification
       d) Experience
       e) Status
    ii) Strength of the safety department including safety officers and staff.
13. Does the head of safety department/ safety officer report to the chief executive ?
14. How often are the safety officers retrained in the latest techniques of total safety management ? What is the frequency of retraining ?
15. What additional duties the safety officer is required to do ?
16. What is the power of safety officer *vis-a-vis* unsafe condition or unsafe act?

(B) Safety Committee (s)

17. Does the factory has a safety committee(s)? Give details of their types, structures and terms of reference.
18. Is the tenure of the safety committee(s) as per the statute?
19. How are the members of safety committee (s) selected ? (elected/nominated)
20. How often are the meetings of safety committee(s) held ?
21. What are the subjects? Are the problems discussed in the meetings ? (Attach a copy of agenda and minutes of the last meeting)
22. How are the recommendations of the committee(s) implemented ?
23. Are the minutes of the safety committee(s) meetings circulated among the members ?
24. Are the minutes forwarded to the trade union(s) and chief executive and occupier?
25. How the management and trade union play their active roles in supporting and accepting the committee(s) recommen- dations ?
26. How are the safety committee(s) members apprised of the latest developments in safety, health and environment ?

(C) Safety Budget

27. What is the annual safety budget?
28. How much percentage is this budget of the total turnover of the company.
29. How much budget has utilized till date ?
30. Is the safety budget adequate ?
31. How is the safety budget arrived at ?
32. What is the pattern of expenditure for the last five years ?
33. What are the approved sanctions for the expenditure in this budget ?
34. Does this budget get reflected in the annual report of the company ?

ACCIDENT REPORTING, INVESTIGATION AND ANALYSIS

35. Whether the accident data for the last three years for reportable and non-reportable accident available ?
36. Is there any system of classifying and analyzing the near-miss incidents and accidents ? Give the details.
37. Are all near-miss incidents and accidents reported and investigated ?
38. For how many years are the investigation reports retained?
39. By whom the accident statistics and data are maintained ?

40. How is the top management apprised of these data ?
41. Is the accident statistics effectively utilized ? If yes, how ?
42. What nature of injuries occurred during the last three years ?
43. How do you ensure implementation of the recommendations to avoid the recurrence of the incidents and accidents ?

SAFETY INSPECTIONS

44. What type of safety inspections are carried out and what are their frequency ?
45. Is there any system of internal inspection ?
46. Who does the inspections ?
47. Are the check-list prepared for these inspections ? (Specify item-wise, for example, housekeeping, fire protection, etc).
48. To whom the recommendations are submitted ?

SAFETY EDUCATION AND TRAINING

(A) Training

49. Is there any training department ?
50. Is there any programme of induction training ?
51. Mention the duration of induction training for each category of employees.
52. Whether the assessment of the trainee worker is done or not ?
53. What infrastructural facilities with audio-visual support are available for training ?
54. Do the programmes cover the plant safety rules, hazard communication and any other special safety rules or procedures unique to the plant or specific departments ?
55. Whether the training programmes are conducted in the local language ?
56. Whether visits to safety institutions/ organizations are arranged ?

(B) Periodic Training/Retraining

57. Are all the employees trained and what is the frequency of such training ?
58. Do the training programmes cover safety and health aspects and if so how much (in terms of number of sessions/hours) ?
59. Do the trained supervisors train their own employees in safety and health aspects ?
60. Is the retraining performed whenever new hazards/process changes are followed/ introduced?
61. How are the senior management personnel trained in safety and health ?
62. How many employees have been trained in safety and health in the last five years ? Give break up with details.
63. How many man-days/hours are used in training the employees?
64. How do you ensure that the training is put to use by the employees trained in safety and health.
65. What is the training plan for the next two years ? Give details.
66. What documentation system has been established regarding safety and health training ?

(C) Safety Communication/ Motivation /Promotion

67. Does the factory has safety suggestion schemes ? Give details.
68. Does your factory participate in National Awards/Suggestion schemes ?
69. Has your factory been awarded during last five years?
70. Are safety contests organized in the factory? Give details.
71. What are the publications of your organization? Do they include information on safety and health subjects?
72. Is the literature on safety and health made available to the employees?
73. How is the safety and health publicized in your factory?
    i) Bulletin boards?
    ii) Post serious accidents?
    iii) New letter?
    iv) Others? Specify
74. Does the organization celebrate safety day/week or organize safety exhibition?
75. When was the last safety day/week celebrated?

FIRST AID

76. Are adequate number of first aid boxes provided ? Give location details ?
77. Is there any first aid/ambulance room ?
78. Are qualified/trained first aid's available in each shift?
79. How many qualified/trained first aide's are available at each plant/department ?
80. How many persons are trained/given refreshers training in first aid in a year?

OCCUPATIONAL HEALTH CENTRE

81. Whether occupational safety and health center is provided or not ?
82. Does it conform to the provisions of the existing legislation ?

83. Are the Medical Attendants/Doctors available in each shift ?
84. Is ambulance van available in each shift ?
85. Any liaison with the nearest hospital(s) ? Give details.

GENERAL WORKING CONDITION

(A) Housekeeping

86. Are all the passages, floors and the stairways in good condition ?
87. Do you have the system to deal with the spillage ?
88. Do you have sufficient disposable bins clearly marked and whether these are suitably located ?
89. Are drip trays positioned wherever necessary ?
90. Do you have adequate localized extraction and scrubbing facilities for dust, fumes and gases ? Please specify.
91. Whether walkaways are clearly marked and free from obstruction ?
92. Do you have any inter-departmental competition for good housekeeping ?
93. Has your organization elaborated good housekeeping practices and standards and made them known to the employees ?
94. Are there any working conditions which make the floors slippery ? If so, what measures are taken to make them safe ?
95. Does the company have adequate measures to suppress polluting dust arising out from road transport?

(B) Noise

96. Are there any machines/processes generating noise ? Specify.
97. Was any noise study conducted ?
98. Which are the areas having high-level noise ?
99. Have engineering and administrative controls been implemented to reduce noise exposure below the permissible limits ?
100. Is there a system of subjecting all those employees to periodic audiometric test who work in high level noise areas ?
101. Whether the workers are made aware of the ill-effects of high noise.
102. Whether any personal protective equipment along with ear muffs/plugs are provided and used.

(C) Ventilation

103. Whether natural ventilation is adequate or not?
104. Whether dust/fumes/hot air is generated in the process ? Give details.
105. Is there any exhaust dilution ventilation system in any section of the plant ?
106. Whether any ventilation study has been carried out in the section(s) to check the record ?
107. Are periodic/preventive maintenance of ventilation system carried out and record is maintained ?
108. Does any ventilation system recirculate the exhausted air in work areas ?
109. Is the work environment assessed and monitored ?
110. Whether personal protective equipment are given to workers exposed to dust/fumes and gases ? Give details.

(D) Illumination

111. Was any study carried out for the assessment of illumination level ?
112. Is there any system of periodical cleaning and replacing the lighting fittings/lamps in order to ensure that they give the intended illumination levels ?
113. Are the workers subject to periodic optometry tests and records maintained? Give details.

HAZARD IDENTIFICATION AND CONTROL

114. Are all the hazardous areas identified ?
115. What are the types of hazards (physical- noise, heat, etc, and chemical-fire, explosion, toxic release, etc) ?
116. What steps have been taken to prevent these hazards ? Give details.
117. Are there any safety inter-locks, alarms and trip system ? Give details.
118. Are these tested periodically ? How often ? Please specify.
119. Are there any ambient monitoring devices with alarms for leakage of hazardous materials ? Give details.
120. Are safety audit or HAZOP or any other studies carried out and the recommendations implemented ? Give details.
121. What has been the major modification done in plant/process and has the approval of the competent authority concerned ?
122. What decision and monitoring equipment are available and used for checking the environmental conditions in and around the plant ? Give details.

TECHNICAL ASPECT

Safe Operating Procedures

123. Are written safe operating procedures available for all operations ?
124. Whether the written safe operating procedures displayed or made available and explained in the local language to the workers ?
125. Whether the safe operating procedures are prepared jointly by the plant and safety departments ?
126. What system is used to ensure that the existing safe operating procedures are updated ? Give details.
127. Have the workers been informed of the consequences of failure to observe the safe operating procedures ?
128. Are contractor workers educated and trained to observe safety at workplace ?
129. Whether contractor's workers are permitted on process/operations ? Give details.

WORK PERMIT SYSTEM

130. What necessary type of work permits exists in your factory ? Give details.
131. What are the hazardous chemicals handled?
132. Are the keys kept for individual locks which are used for electrical lock outs with the supervisor concerned ?

WASTE DISPOSAL SYSTEM

133. Is identification done for various types of wastes ? Give details.
134. Are these quantities less than those specified by the hazardous wastes. (*Management & Handling Rules*, 1989) ?
135. What are their disposal modes ?
136. What are the systems/measures adopted for controlling air/water/land pollution?
137. What is the system of effluent treatment plant and whether it is approved by the competent authority?
138. How are the treated effluent used?

PERSONAL PROTECTIVE EQUIPMENT (PPE)

139. Has a list of required PPE for each area/ operation been developed and the required PPE is made available to the workers ?
140. Are the safety department and the workers consulted in the selection of PPE ?
141. Have the workers been trained in proper use of PPE ?
142. What is the system of replacement/issue of PPE ?
143. What are the arrangements for safe custody and storage of PPE provided to the workers?
144. Are the contractor's workers provided with the required PPE ? Who is responsible ? Give details.
145. Are the PPE conform to any standard ? Give details.
146. Give the details of PPE and also specify the responsibility for their inspection and maintenance ?

FIRE PROTECTION

147. Indicate on a plant layout the location, number (Quantiy) and types of portable fire extinguishers available.
148. Are the fire fighting system and equipment approved, tested and maintained as per relevant standard ?
149. What is the inspection and maintenance schedule of the above extinguishers ? Who performs these functions ?
150. Which areas of the plant are covered by fire hydrants ? Indicate the locations of the hydrant points and how the required pressure maintained in the system and ensured.
151. What is the capacity of dedicated water reservoir for supply to the hydrants ? What is the source of water ?
152. i) How is the power supply to the fire hydrant pump ensured ?
    ii) What is the alternate source of supply in case of power failure ? Give details.
153. Are all personnel conversant with the fire prevention and protection measures ? Give details.
154. What percentage of plant personnel and staff and officers, have been trained in the use of portable fire extinguishers ? Give details.
155. Do you have fixed or automatic fire fighting installation(s) in any section of your plant?
156. Are the fire alarms adequate and free from obstruction ?
157. Do you have fire department ? If yes, give details.
158. What is the system for conducting mock drills ? Give details.
159. Do you have any mutual aid scheme with any of your neighbouring industry or any local organization(s) ?
160. Give details of the existing fire resistant walls and doors.
161. Do you have any system of colour coding for all the pipelines for hazardous chemical ? Give details including marking of flow directions.
162. Are there any safe containers for the movement of small quantities of hazardous chemicals ? Give details.

163. Are all self-closing fire doors in good condition and free from obstructions ?
164. How many major and minor incidents/fires were there in the factory during the last five years ? Give department/plant-wise.
165. Have all the fires/incidents been investigated and corrective actions taken ? Give break up.

EMERGENCY PREPAREDNESS

166. Is there an on- site emergency plan for your factory ? (attach a copy of the plan)
167. What is the frequency of conducting mock drills of on-site emergency plan?
168. What are the number and location of emergency control centre, assembly points?
169. Whether emergency team or the key personnel identified ?
170. Are suitable and adequate protective and rescue equipment available ? How is the emergency rescue team trained to use these equipment ?
171. How is the emergency communication with local bodies and other organizations ensured? Give details.
172. Is any alternate power source identified ? Give details.
173. What is the medical emergency response system ? Give details.
174. Are you a member of any MUTUAL-AID-SCHEME of your area? If so give details.
175. How many emergency alarm system(s) is/are available ? Give details.

PLANT LAYOUT AND AREA CLASSIFICATION

176. What is the system of classification of hazardous zones in the plant for electrical installations ? Please specify.
177. Whether periodic inspection and preventive maintenance of electrical installations is done by a qualified person and record is maintained ?
178. Whether plant layout with area classification has been displayed at appropriate place (s) ?

STATIC ELECTRICITY

179. Whether the process(s) and equipment generate and accumulate static charge have been identified ? Give details.
180. Whether all such equipment are properly bonded and earthed?
181. How is electrical resistance for earthing circuits maintained ? Are periodic inspections done and recorded ?
182. Are adequate earthing arrangements made at the terminal points where hazardous chemicals are handled through pipes ?
183. Are anti-static charge devices fitted wherever necessary ?
184. Whether these devices are periodically checked and maintained by a qualified person ?

PRESSURE VESSELS (FIRED AND UNFIRED)

185. Give details of the plants, piping and vessels which are operated at a pressure greater than the atmospheric pressure ?
186. How is it ensured that the working pressure inside the pressure vessels/pressure plants will not exceed their maximum working pressure for which it is designed?
187. What means of isolating the pressure vessels or means to prevent rise in pressure are installed ?
188. What standards/codes of practice are adopted for design, fabrication, operation and maintenance of the pressure vessels and records maintained?
189. How are the pressure vessels tested ? Give details.
190. Is there any competent person for testing these pressure vessels ? Give details.
191. How are the recorded results verified ?
192. Give details of safety devices available for these pressure vessels ?
193. Whether log book for pressure vessel and pressure plant has been maintained ?

NEW EQUIPMENT REVIEW

194. What is the system for effecting any change in the existing plant, equipment or process? Whether it is approved by the appropriate competent authority ?
195. Whether the P & I diagrams and other related documents are updated accordingly?

LIFTING MACHINES & TACKLE

196. Whether all the lifting machines are marked with their S.WL.?
197. Are all the examinations and tests documented in the prescribed form ?
198. Are all the examinations and tests carried out and certified by competent person(s) ? Give details.
199. Are adequate lifting tackles provided at all the places where it is required ? Give details.
200. Are the trained operators engaged for operating the equipment ? Give details.

201. What is the system of training such operators ?
202. Are all the lifting machines and tackles maintained in good conditions and record maintained ?

MOBILE EQUIPMENT AND VEHICULAR TRAFFIC

203. Are all the mobile equipment in good condition ?
204. Are trained drivers engaged for fork-lift trucks ?
205. What is the system for identifying these drivers from other drivers ?
206. What system do you adopt to assess their standard of driving as poor/fair/ satisfactory/ good ?
207. Are there adequate number of warning signs/signals ?
208. Are the hazards associated with transportation within the plant identified and safety measure taken ? Give details.

ACCESS

209. Is adequate safe access provided to all places where workers need to work ?
210. Are all such access in good condition ?
211. Are portable access platforms necessary ? If yes:
    i) Are these sufficient ?
    ii) Are these regularly inspected ?
    iii) Are these readily available?
    iv) Are these provided with toe-boards and railings ?
212. Oiling and greasing points:
    i) Are these located and extended to safe place clear of moving parts ?
    ii) Are these easily accessible?
    iii) Are these liable to drip into walkways?
    iv) Whether such workers were trained and whether they are provided with fit-tight clothings and register is maintained ?
213. Are all drain covers in good condition and fitting flush ?

MATERIAL HANDLING

214. Are there adequate storage facilities available ?
215. Are these areas clearly defined ?
216. Are all racks and steel ages in good condition ?
217. Have you adequate equipment for handling materials ?
218. Do the workers know the hazards associated with manual material handling ?
219. Where manual handling is necessary, are the workers been trained ?
220. Do they practice this ?
221. Do workers follow safe procedures for storage of materials ?
222. Whether contractor workers are trained in safety ?
223. What is the system for handling over plant to the maintenance department and receiving back ?
224. Is the system consistently applied ?
225. What is the system for the preventive and predictive maintenance and how do you ensure its effectiveness ? Give details.

TANK STORAGE VESSEL AREA

226. Whether it is pressure vessel or not.
227. Give storage vessels designation (exceeding threshold quantities specified in *MSIHC, Rules* 1989).
228. Give the names of storage materials in each of them.
229. What are the vessel sizes (capacity in tonnes)?
230. What is the material of construction for each vessel and what standards followed in designing/fabricating the vessel?
231. What are the operating pressure and temperature?
232. What are the vessels location? (Please indicate on-site plan or plot plan)
233. Indicate whether vessels are above ground/ underground.
234. If any of the tanks storing flammable material, whether electrical installations are flameproof or not?
235. Are these storage vessels bunded/dyked?
236. If yes, what is the capacity of the bunds/ dykes?
237. Are the vessels properly bonded and earthed and whether periodically checked and record maintained?
238. How are vessels isolated in the event of a mishap?
239. Are the vessels fitted with remotely controlled isolation valves?
240. Are vessels provided with emergency vent, relief valve, bursting disc, level indicator, pressure gauge, overflow line?
241. Where do such vents discharge?
242. Are the vessels provided with alarms for high, level, high temperature and high pressure?
243. Are stand by empty tanks provided for emptying in case of emergencies?
244. What are the provisions made for fire fighting/tackling emergency situations around the storage vessels?
245. Has any consequence analysis been carried out for these vessels?
(If yes, give details)

246. What periodical testings are carried out on the vessels to find out the integrity of the vessels?
247. Whether these tests are certified by the approved competent persons?
248. Whether log sheets are filled up on daily basis for recording the parameters of these vessels?

ON-SITE GAS CYLINDERS STORAGE AREA

249. What are the various gas cylinders used in the plant? (give details).
250. What are the storage facilities?
251. What are the measures taken for combating any emergency in the cylinders storage area?
252. Are valid licenses available for storing all these cylinders?
253. Whether integrity test certificates are obtained from the suppliers of the cylinders?

COMMUNICATION SYSTEM ADOPTED IN PLANT

254. Are public address system available in all plant areas?
255. Are public address systems provided with uninterrupted power supply?
256. Whether public address system is checked periodically for its proper functioning?
257. Is there any hot line provided to fire station?
258. What is the means of communicating emergency in the plants?

TRANSPORTATION

259. What potentially hazardous materials are transported to or from the site (including wastes)?
260. What modes of transport are used:
    i) Road?
    ii) Rail?
    iii) Pipelines?

ROAD

261. Does the company employ licenced vehicle of its own/outside sources?
262. Are the loading/unloading procedures on- site and safety precautions displayed?
263. Are loaded tankers or trucks parked in a specific area on-site?
264. Do all truck and tanker drivers carry TREM card or instruction booklet?
265. Do all truck and tanker drivers get training in handling emergencies during transport?

RAIL

266. What hazardous materials are transported by rail?
267. Does the company have a direct siding on site?
268. Are tankers or others wagons used in transportation?

PIPELINES

269. What materials are transported to and from the site by pipeline?
270. Are the pipelines underground or overground?
271. Are corrosion protection measures employed in pipelines?
272. Whether intermediate booster pumps are used?
273. What is the maximum, minimum and average transfer rates?
274. Are the pipelines extended in the public domain?
275. Are the pipelines dedicated for each type of chemicals?
276. Are the pipelines fitted with safety equipment such as leak detectors, automatic shut-off valves, etc?
277. What is the frequency and method of testing of the pipeline?
278. Is there written procedure for tackling leakages in pipeline?

ANNEX D

(Foreword)

COMMITTEE COMPOSITION

Industrial Safety Sectional Committee,CHD 8

Chairman	*Representing*
SHRI K. C. GUPTA	National Safety Council, Mumbai
Members	
SHRI PREM BAWEJA	Hindustan Aeronautics Ltd, Bangalore
SHRI B. VIJAY KUMAR (*Alternate*)	
SHRI BHAGWATI PRASAD	Employees State Insurance Corporation, Calcutta
SHRI SATISH CHANDER (*Alternate*)	
DR A. K. BORAL	Ministry of Defence(DGQA), New Delhi
SHRI R. SRINIVASAN (*Alternate*)	
DR D. R.CHAWLA	Department of Industrial Policy and Promotion, New Delhi
SHRI M. K. BANERJEE (*Alternate*)	
DIRECTOR (MINES SAFETY)	Directorate General of Mines Safety, Dhanbad
SHRI A. K. RUDRA (*Alternate*)	
SHRI V. K. GOEL	Central Boiler Board, New Delhi
SHRI M. L. AHUJA (*Alternate*)	
SHRI J. P. GOENKA	Mining, Geological and Metallurgical Institute of India, Calcutta
SHRI N. DUTTA (*Alternate*)	
SHRI M. KANT	Safety Appliances Manufacturers Association, Mumbai
SHRI KIRIT MARU (*Alternate*)	
SHRI G. S. KASHYAP	Office of the Development Commissioner (SSI), New Delhi
DR V. K. JAIN	Standing Committee on Safety for Steel Industry, SAIL, Ranchi
SHRI K. SENGUPTA (*Alternate*)	
SHRI M. K. MALHOTRA	Directorate General Factory Advice Services and Labour Institute, Mumbai
SHRI H. N. MIRASHI	Factory Inspectorate, Government of Maharashtra, Mumbai
DR A. S. GHOSHAL	Chief Controller of Explosives, Nagpur
SHRI R. H. BHALEKAR (*Alternate*)	
SHRI A. K. ACHARYA	Central Mining Research Institute, Dhanbad
SHRI P. K. NAIR (*Alternate*)	
SHRI S. K. MUKHERJI	Standing Fire Advisory Council, New Delhi
SHRI A. K. GHOSH (*Alternate*)	
SHRI L. C. GUPTA	Airport Authority of India (National Airport Authority), New Delhi
SHRI H. S. RAWAT (*Alternate*)	
SHRI S. NARAYAN	Bhabha Atomic Research Centre, Mumbai
SHRI M. SRIVASTAVA	Ministry of Petroleum and Natural gas (Oil Industries Safety Directorate), New Delhi
SHRI S. N. MATHUR (*Alternate*)	
SHRI H. N.GUPTA	National Safety Council, Mumbai
SHRI R. P. BHANUSHALI (*Alternate*)	
SHRI M. R. SAMPATH	Indian Cotton Mills Federation, Mumbai
SHRI O. N. DAGA (*Alternate*)	
DR S. SADULLA	Central Leather Research Institute, Chennai
SHRI G. SWAMINATHAN (*Alternate*)	
REPRESENTATIVE	Confederation of Indian Industries, New Delhi
SHRI P. N. SANKARAN	Indian Space Research Organization, Shriharikota
SHRI V. K. SRIVASTAVA (*Alternate*)	
SHRI G. P. YADAV	National Institute of Occupational Health, Ahmedabad
SHRI N. JAIPAL (*Alternate*)	
SHRI R. K. PODDAR	Larsen and Toubro Ltd (ECC Consumers Group), Chennai
DR R. S. RAJAGOPALAN, Director (Chem)	Director General, BIS (*Ex-officio Member*)

Member-Secretary

SHRI S. MAZUMDER
Joint Director (Chem), BIS

(*Continued on page* 16)

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Code of Practice on Industrial Safety Subcommittee, CHD 8:4

Convener	*Representing*
SHRI H. N. GUPTA	National Safety Council, Mumbai
Members	
SHRI M. K. MALHOTRA	Directorate General Factory Advice Services and Labour Institute, Mumbai
DR V. K. JAIN	Standing Committee on Safety for Steel Industry, SAIL, Ranchi
SHRI K. SENGUPTA (*Alternate*)	
DR A. S. GHOSHAL	Chief Controller of Explosives, Nagpur
SHRI R. H. BHALEKAR (*Alternate*)	
DIRECTOR (MINES SAFETY)	Directorate General of Mines Safety, Dhanbad
SHRI A. K. RUDRA (*Alternate*)	
SHRI H. N. MIRASHI	Factory Inspectorate, Government of Maharashtra, Mumbai
SHRI S. K. MUKHERJEE	Standing Fire Advisory Council, New Delhi
SHRI A. K. GHOSH (*Alternate*)	
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REPRESENTATIVE	Confederation of Indian Industries, New Delhi
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DR S. NAND	Fertilizers Association of India, New Delhi
SHRI A. B. LAL	National Thermal Power Corporation, New Delhi
SHRI P. CHINNA (*Alternate*)	
DR P. K.GHOSH	Atomic Energy Regulatory Board, Mumbai
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