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**The Effectiveness of Safety Audits  
on PIC Performance**

presented by

**Bader Al-Adwani  
Safety Engineer  
Petrochemical Industries Company (K.S.C.), Kuwait**



## About the IFA Technical Committee

The IFA Technical Committee encourages the development and adoption of technology improvements that can lead to greater production efficiencies and reduced emissions, as well as better health and safety standards throughout the fertilizer industry. Our mission is to actively promote the sustainable development of efficient and responsible production, storage and transportation of all plant nutrients. The Technical Committee accomplishes these objectives through a variety of channels, including:

- Technical and policy-oriented information materials. The committee regularly conducts surveys and produces reports on key industry metrics, including the IFA Energy Efficiency and CO<sub>2</sub> Emissions Report, the IFA Safety Report, and the IFA Emissions Report. This work enables member companies to assess their operations over time, make comparisons with similar facilities on an established level of performance, determine the need for technology improvements and identify good industrial and management practices.
- Regular exchange of information on technology developments and industrial practices. A key role of the IFA Technical Committee is to encourage ongoing technical innovation in the fertilizer industry through the development, compilation and exchange of technical information between members, researchers, engineers, equipment suppliers and other industry associations. To this end, the committee organizes a Technical Symposium every other year to examine progress in the production technology of fertilizers. Each Symposium traditionally features the presentation of 30-40 new technical papers from member companies worldwide, providing members with information on the latest technological developments. In the intervening years, the committee holds a variety of meetings to assess current industrial practices and standards, with an eye toward identifying key developments of interest to members.
- Technical and educational workshops and special events. The IFA Technical Committee provides workshops designed for engineers working in the fertilizer industry, particularly those who have recently assumed new responsibilities, and for new engineers to increase their technical knowledge. These workshops (e.g. concentrating on nitrogen and/or phosphate fertilizer production) are designed to improve the participants' skills and broaden their vision and understanding of the entire industry, including technology, economics, energy use, safety and environmental stewardship. Workshops also provide engineers with an opportunity to exchange ideas, solve specific problems and improve plant operations and profitability.
- Education and advocacy. The IFA Technical Committee recognizes that customers, markets and regulatory environments are best served by clear and concise information on the fertilizer industry and its practices and products. Because the knowledge and expertise found within the fertilizer industry is the best source for this information, the Technical Committee endeavours to educate policymakers, standardization bodies, customers and the public on industry achievements, technological advances, voluntary initiatives and best practices. The committee also encourages universities and development centres to conduct research on fertilizer product development and production processes.

*(as provided by the author for distribution in Alexandria)*

## **The Effectiveness of Safety Audits on PIC Performance**

### **Abstract**

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One of the most effective tools a company can employ is the use of management supported Safety Audit Program. Therefore Kuwait Petrochemical Industries Company (PIC) established a structured and systematic safety audit program. The program includes all PIC locations and involves all levels of high management of floor ship.

The objectives of this program are to:

- 1- Identify and eliminate hazards before an incident takes place.
- 2- Identify weaknesses in safety & training programs.
- 3- Help measure communication effectiveness.
- 4- Help maintain standards by ensuring that everyone understand and follow the rules and procedures.
- 5- Motivate employees and raise safety awareness.

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#### ***Contact details:***

P.O. Box 9116, 61002 Ahmadi, Kuwait  
Tel: +965 3 260622 - Fax: +965 3 260075  
bader\_aladwani@pic.com.kw

All papers and presentations prepared for the IFA Technical Committee Meeting in Alexandria will be compiled on a cd-rom to be released in May 2005.





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## **Introduction**

### ***PIC Vision***

We will build a sustainable leading position in basic and commodity chemicals by being the reliable, preferred supplier of value-added products. We will achieve this by operating efficiently through best work practices, developing R&D capability and fostering true partnerships with leading organisations.

We regard our workforce as our most valuable asset and always operate with high concern for safety and the environment.

### ***Central Health, Safety and Environmental Committee (CHSEC)***

***Formed – 19/2/2000***

The CHSEC sits on top of the Safety Organization. It is the primary policy-making body in the safety organization. It is usually headed by the top manager and staffed by upper management from all areas of the plant.

#### **CHSEC members**

Managing Director & Chairman	President
EAMD Admin & Projects	Vice President
EAMD Marketing	Member
EAMD Manufacturing	Member
EAMD Planning & Finance	Member
Fertilizer Operations Manager	Member
Technical Services Manager	Member
SHE Manager	Member
Company Physician	Member
Environmental Supdt.	Member
Occupational Health Controller	Coordinator & Member

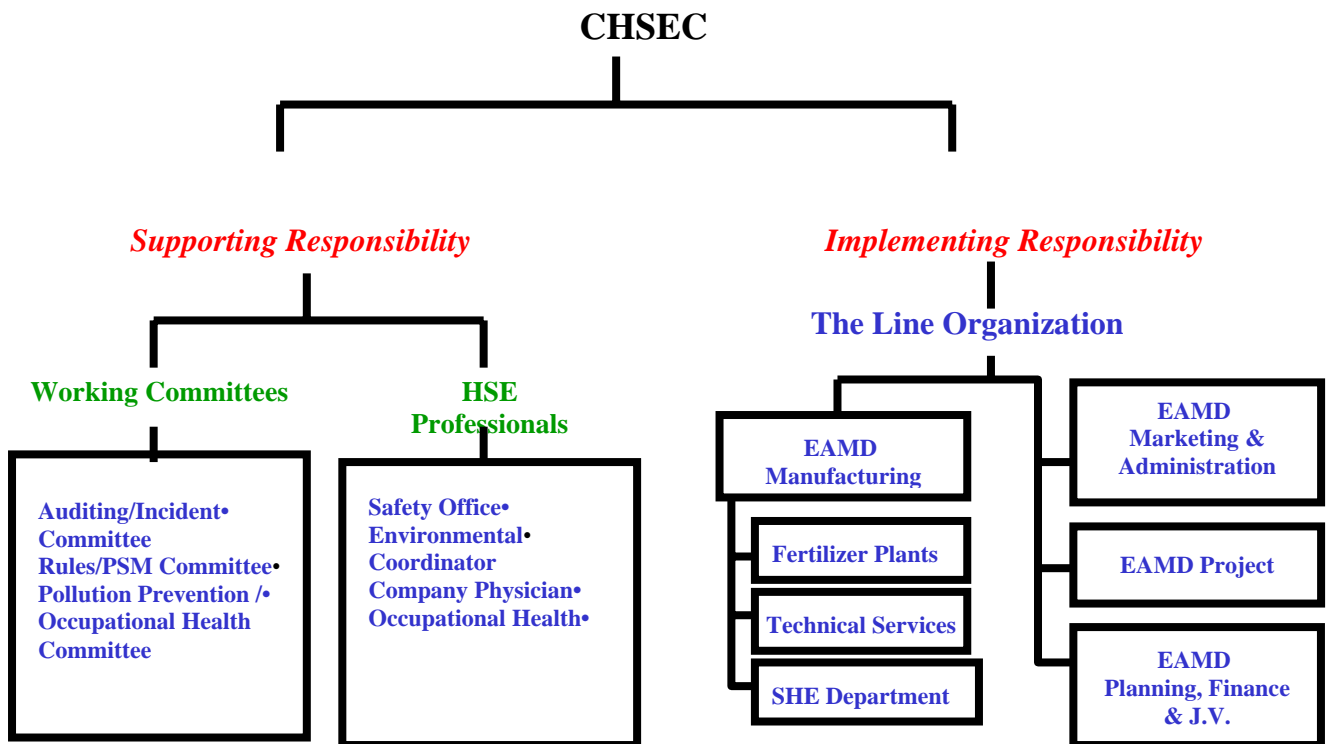
#### **Roles and Responsibilities of CHSEC**

- ▶ Establishes a documented HSE Philosophy.
- ▶ Establishes achievable goals and objectives.
- ▶ Approves and encourages initiatives.
- ▶ Approves rules and procedures.
- ▶ Holds people accountable.
- ▶ Reviews plant HSE performance.
- ▶ Establishes all sub-committees.

**Working Committees:**

They are working sub-committees, each dealing with a specific area HSE activity or subject. Although members are of the line organization, these committees play a supportive role to the line organization.

- 1. Auditing/Incidents Committee
- 2. Process Safety Management Committee
- 3. Pollution Prevention/ Occupational Health Committee



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## *The Role of Auditing/Incidents Committee (AIC)*

- ▶ Finalize and present Auditing System as described in 6-month.
- ▶ Report Auditors performance.
- ▶ Report about auditing reports analysis.
- ▶ Finalize and present incident reporting & investigating system as described in 6-month.
- ▶ Promote adopted systems.
- ▶ Monitor and measure effectiveness of system.

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## *Development of Safety Auditing System*

One of the most effective tools a company can employ is the use of management supported Safety Audit Program. Therefore Kuwait Petrochemical Industries Company (PIC) established a structured and systematic safety audit program. The program includes all PIC locations and involves all levels of high management of floor ship.

It is good business practice to audit every aspect of a company's activities to ensure that it is operating within the constraints of company policy and the law, within acceptable social parameters and in an efficient manner.

To the public the word "auditing" has traditionally been identified with financial matters but in today's progressive industries the techniques of the audit have been extended to cover nearly every fact of a company's affairs. In the process industries in particular, audit program have, for a number of years, been systematically employed in the field of safety and are now being extended into other areas such as occupational health and environmental protection to ensure that performance measures up to the exacting standards demanded by companies themselves, by legislation and public expectations.

The penalties for falling short of these standards are clear and manifest themselves in many ways. Personal suffering, property and environmental damage, financial loss and enforcement action are amongst the most obvious. As public reception of industry and the environment increases, so does the range the intangible costs – public structure, lower reputation, loss of goodwill and in the extreme, business failure.

Auditing is the most effective way of ensuring that standards are maintained and improved. A good audit program highlights problem areas, suggests remedial actions and monitors action taken to control risks to employees, the public and the environment.

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## ***Scope of Work***

All safety, occupational health and environment protection aspects of a company's activities should be subject to audit. The scope of the audit may vary in range, level, and content, for example:

**Level** may vary from a supervisor's inspection, or a local management departmental audit, to a corporate comprehensive site review.

**Range** can cover any combination of safety, occupational health and environment protection.

**Content** may encompass compliance monitoring, systems of work and procedures, technical and professional standards, design criteria, unsafe conditions and acts, evaluation of actual or potential adverse safety, health or environmental impacts.

It is important that whatever the activity to be audited, the scope of the audit must be clearly defined and understood by all those concerned.

Management of the safety health and environmental protection aspect of any business involve a stepwise approach:

Establishing a policy for the protection of people and the environment.

Defining management responsibility.

Identifying hazards and problems.

Assessing the risks.

Adopting standards, engineering controls, systems of work and procedures to minimize risk.

Auditing performance.

Implementing improvements.

## **Who should audit?**

Auditors should be from all levels of management. Each auditing team should include at least one employee that participated in Safety Management Audit course.

## ***Safety Audit Types***

There are many types of audit and each organization must tailor the program and detail to suit their own particular needs.

Types of Audits implemented in PIC are as follows:

### ***1. Scheduled Audits***

Every year the auditing committee releases its scheduled audits with assigned auditors for the entire year covering all company facilities.

Conducted by 3 assigned auditors (An assigned auditor is not necessarily a certified auditor) one of them from the area being audited and two from other areas. One of the assigned employees from other areas will be designated as a coordinator. The coordinator will be from supervisory level and above and should be a certified auditor. For scheduled audits assigned auditors are chosen randomly.

### ***2. Silent hour Audits***

This is only applicable to areas active after the day shift, weekends and holidays.

Auditors will be pre selected and should be from supervisory level and above; the coordinator should be certified auditor from the same area.

### ***3. Unscheduled Audits***

This is the responsibility of supervisors or superintendents of a particular area.

### ***4. Safety Section Audits***

This is the responsibility of Safety Section. The results can be used to test effectiveness of other audits and auditors. An area supervisor must be included in these audits.

## ***Coordination and Scheduling***

- ◆ For scheduled audits each team will have one of its members designated as the coordinator. It is his responsibility to coordinate among the other auditors and the area to be audited.
- ◆ For silent hour audits each team will have one of its members designated as the coordinator. It is his responsibility to coordinate among the other auditors. The area audited will not be informed of the time of the audits.
- ◆ For unscheduled audits, each team will have one of its members designated as the coordinator. It is his responsibility to coordinate among the other auditors. The area audited will not be informed of the time of the audits.
- ◆ Safety audits, it's the Safety Supdt. responsibility to ensure that all areas are audited once a month.

## **Coordinator Responsibilities**

- 1- Coordinate in advance the auditing time with his team before the beginning of each month and with AIC coordinator regarding his attendance during the audited month.
- 2- Carry out the audit and train untrained team members.
- 3- Prepare the audit report and review with team members before distribution.
- 4- Submit the reviewed final report as per auditing system distribution Before 20<sup>th</sup> of the audited month.

## **Duration**

Audits should be limited to **approximately 1 hour**. This is important for two reasons:

- ◆ It makes it easier to do the calculations needed for audit report analysis.
- ◆ It prevents distracting people from performing their work.

## **Frequency**

- ◆ Scheduled Audits should be conducted once a month for each area as per the schedule released annually.
- ◆ Silent hours Audits should be conducted once a month for each area as per the schedule released annually.
- ◆ Un-scheduled Audits should be conducted as often as the person in-charge finds it necessary but must be conducted at least once a month.
- ◆ Safety Section Audits should be conducted as often as the Safety Section finds it necessary (some areas might require more attention) but must be conducted at least once a month.

## ***Safety Audit Techniques***

### **What to look for while auditing:**

- 1- Look for positives and not only negatives.
- 2- Talk to people and get their feedback
- 3- Observation categories:

### **1- Safety Rule Violation (SRV)**

**Actual observation, evidence that a safety rule has been violated**

#### **Examples:**

- Smoking at plant sites, control rooms or offices.
- Not wearing personal protective equipment and clothing.
- Vehicles entering the restricted areas without a valid permit.
- Not signed work permit at working site.
- Not following PIC traffic regulations.
- Entry of transistors radios, TV, to PIC hazardous areas unless permitted by management.
- Not Inspected Fire fighting equipments &/or breathing apparatus.

### **2- Unsafe Acts (UA)**

**Act obviously unsafe, not covered by a written rule or practice  
(Positions of people, Work procedures)**

An unsafe act:

- 1- Offers injury potential to the employee involve and may expose other people to injury.
- 2- Could be a violation of either an established safety rule or procedure, or of an unwritten rule of common sense or good judgment.
- 3- Need not be limited to a specific job.
- 4- Can be an action or inaction that may lead to an incident or injury if not corrected.

#### **Examples:**

- Not permitted running during working hours or at the end of the shift.
- Turning air hoses on yourself or other employees.
- Use of the wrong tool for the job.
- An employee walking in front of a moving vehicle.

### **3- Unsafe Conditions (UC)**

#### **A condition, obviously unsafe**

An unsafe condition:

- 1- It may be caused by fault design
- 2- Incorrect fabrication or construction
- 3- Inadequate maintenance and subsequent deterioration

#### **Examples:**

- Any Un isolated hot lines ( Hot water, steam, etc).
- Low/High pressure steam vent valve is leaking from packing.
- Removed/Unavailable sewage cover.
- Not chained welding cylinders (Oxygen, acetylene cylinders).
- Using roads, avenues, walkways, staircases, emergency & escape way accesses as storage area.
  
- Storing plates, boards, pipes, tubes, etc., on upright or inclined position. Must be laid flat to avoid falling & causing injuries.
- Improper illumination or ventilation.
- Safety of platforms, walkways, stairs and ladders.

### **4- Housekeeping (HK)**

#### **Evidence or sign of poor housekeeping**

#### **Examples:-**

- Civil constructions wastes at the work place
- Storing materials in a non authorized area for storing
- Un painted corroded structure, hand rails, platforms, monkey ladders ...etc.

The following additional categories can be audited.

#### **- Safety systems, procedures & instructions**

- ◆ Documentation, availability, issue ,promotion and training, compliance (reviewed & updated ).
- ◆ Fire prevention , alarm & evacuation.
- ◆ Safety manuals.

- ◆ Permit to work procedures (Confined space entry, Cold & Hot works, & Excavation.
- ◆ Safety data sheet.
- ◆ Control of contractors.

### **- Emergency response & evacuation**

- ◆ Emergency & evacuation plan training.
- ◆ Fire equipments & breathing apparatus training.
- ◆ Fire fighting equipments, safety showers & eye wash Stations testing and maintenance.

### **- Personal Protective equipment (PPE)**

- ◆ Protective clothing, footwear, helmets, gloves.
- ◆ Eye protection.
- ◆ Respiratory protection.
- ◆ Hearing protection.
- ◆ Site rules on use of PPE.

### **- Civil**

- ◆ Ladders, scaffolding, fragile roof, excavation, building fabric.

### **- Electrical**

- ◆ Area classification, isolation of equipment, portable Equipment Earth bonding.

### **- Equipment and tool checks**

- ◆ Welding sets, abrasive wheels, hand tools, cartridge operated Tools.
- ◆ Lifting equipments, machine guarding.

### **- Distribution**

- ◆ Warehousing ,storage & Locker accommodation
- ◆ Transport & material handling
- ◆ Toilets, Restrooms & smoking provisions

### **Key Points in becoming a good observer**

- ◆ Be selective.
- ◆ Know what to look for.
- ◆ Practice.

- ◆ Keep an open mind.
- ◆ Guard against habit and familiarity.
- ◆ Do not be satisfied with general impressions.
- ◆ Record observations systematically.

### **Observation techniques**

1. Stop for 10 to 30 seconds before entering a new area to ascertain where employees are working.
2. Be alert for unsafe practices that are corrected as soon as you enter an area.
3. Remember ABBI – (Look above, below, behind, inside).
4. Recognize good performance.
5. Develop a questioning attitude to determine what injuries might occur if the unexpected happened and how the job might be accomplished more safely. Ask, “what could happen if...”? and “how can this job be performed more safely”?
6. Use your senses: sight, hearing, smell, and touch.
7. Maintain a balanced approach. Observe all phases of the job.
8. Be inquisitive (Inquiring, Investigative).
9. Observe for ideas-not just to determine problems.

### **How to approach someone who is working un-safely**

- ◆ Observe; then get the persons attention.
- ◆ Comment on what the employee doing safely.
  - ▶ Express your concern
  - ▶ Focus on effects, not acts
- ◆ Discuss with him the possible consequences of the unsafe act and safer ways to perform the task.
  - ▶ Question to explore
  - ▶ Question to learn, not to teach
- ◆ Get the employee’s agreement to work safely in the future.
- ◆ Discuss other safety issues on the job.
- ◆ Thank the employee.

### **Reporting & Follow up procedure**

#### **Reporting**

- ◆ The coordinator for each auditing team is responsible for writing the auditing report.
- ◆ The same audit observation form should be used throughout PIC.
- ◆ The same audit report form should be used throughout PIC.
- ◆ The report must be filled within 24 hours of the audit.
- ◆ The report must include time and type of audit.

## **Follow up procedure**

- ◆ The auditing system can only be effective if actions are taken on recommendations.
- ◆ It is the area Supdt. responsibility to make sure that corrective measures are taken whether it is done directly by his staff or other departments or sections.
- ◆ When the area Supdt. receives the audit report he makes his own report with a brief description of action to be taken, responsibility and completion date . He sends a copy of his report before the 10<sup>th</sup> of the month next to the audited month to concerned personnel.
- ◆ The Auditing/Incident Committee follows up with Supdt. and report to.
- ◆ CHSEC on out come. (The follow up role was assigned to the committee coordinator).
- ◆ The Auditing/Incident Committee also reports to CHSEC regarding repeated or serious violations on monthly basis.
- ◆ The CHSEC members can invite any member of line management to address outstanding corrective measures.

## ***Safety Audit Areas***

The areas were defined based on the following:

1. Duration of audit  
Auditors should be able to audit the area within approximately 1 hour.
2. Area of responsibility  
We also tried as much as possible to group those areas that are under the responsibility of a particular section to help pin-point responsibilities.
3. Location  
We grouped areas that are geographically close to each other.

## Areas To Be Audited

Area NO	<u>Area Description</u>
1	Materials building ,central store shed ,open martial storage ,and scrap yard.
2	Lab A & B (all fertilizer plants labs).
3	Training center and old Admin. Building and Printing building.
4	Maintenance Workshop A, Civil Workshop, and Scarp, Salvage yard.
5	Maintenance Workshop B, Old valve store & civil office.
6	Engineering & Inspection lab
7	Clinic & Restaurant.
8	Export A, Warehouse – A.
9	Export B, Export Offices, Warehouse B.
10	Port area from stn.5 to port area.
11	Control room A, Urea I. & Granulation Unit A.
12	Urea I Utilities, Scale Belt, Pipe Tracks, Cooling Water Reservoir.
13	Urea II & III (Ground Floor Area), CO2 Comp. & Inst. Air Comp.
14	Urea II & III (1 <sup>ST</sup> and above floors), and Scale Belt.
15	Ammonia IV.
16	Ammonia II & III, N2 Unit & Inst. Air Comp.
17	Control Room B, Ammonia Storage Area, Skimmer Utilities B.
18	Streets, All Gates, & Security Offices.
19	Safety building & Rescue rooms (R.R).
20	Electrical main Substations A (1.2.3.4).
21	Main substations B (C 7101),(C3201),(C2202),(C6401) & (C4001 A/B) , Export (B) substation, Emergency Generators & Elect. Storage Yard.
22	Conveyor Belt (From Stn. 1 To Stn. 4).
23	Conveyor Belt (From Stn. 4 To Stn. 5).
24	Boubyan Club.
25	Head Office & Emergency Room.

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## ***Safety Audit Seven Keys To Excellence***

### **1- Set the example of excellence by your actions**

Set the pace and greatly influence employees' in safety and health by their actions:

- ▶ Observe all safety and health rules and safe practices on and off the job.
- ▶ Set the example that rules and procedures are important and must be followed at all times.
- ▶ Wear personal protective equipment where required or suggested, this is a good way to "sell" the practice and demonstrate that this is the intelligent option.
- ▶ Discuss some aspects of safety and health with others By discussing safety regularly, makes safety a routine part of each day's activities and demonstrates personal interest in it.
- ▶ Be enthusiastic about safety and health and set high standards. The enthusiasm that the supervisor display will generate enthusiasm in employees.
- ▶ Give safety and health equal priority among your problems.  
Never let quality, production, or cost considerations compromise Safety.

### **2- Know the operation**

To appreciate and evaluate fully the safety hazards involved, you need to understand thoroughly the operations that will be audited. Machine data and knowledgeable personnel are useful source of information.

### **3- Be alert opportunities to increase the level of safety in your area**

Be alert as you walk through your area. You may discover and be able to correct hazards or practices that might otherwise cause injuries.

#### **4- Audit often; audit intelligently**

Working safely can be achieved through the recognition and elimination of unsafe practices and unsafe conditions. There is no substitute for audits made by the supervisor. Including hourly employees in the audits is one way to involve them in the program, to improve work practices, and to show them that they have a part in the safety effort. Including them also gives the supervisor a chance to illustrate the standards of performance that are expected.

#### **5- Take effective corrective actions**

The field observations must be translated into effective corrective actions. Employee must understand that correction of an unsafe practices is in itself a matter of discipline, it is, more importantly, also a step toward continually improving safety performance correction must be timely to be effective.

#### **6- Maintain discipline**

When reasonable levels of performance are not met, and no extenuating circumstances exist; disciplinary action may be in order. Such action should be as consistent and as equitable as possible to keep resentment to a minimum.

#### **7- Know your employees and involve them in your programs**

To achieve safe & efficient performance, employees must be involved in planning and execution phases to give them a sense of ownership in the program.

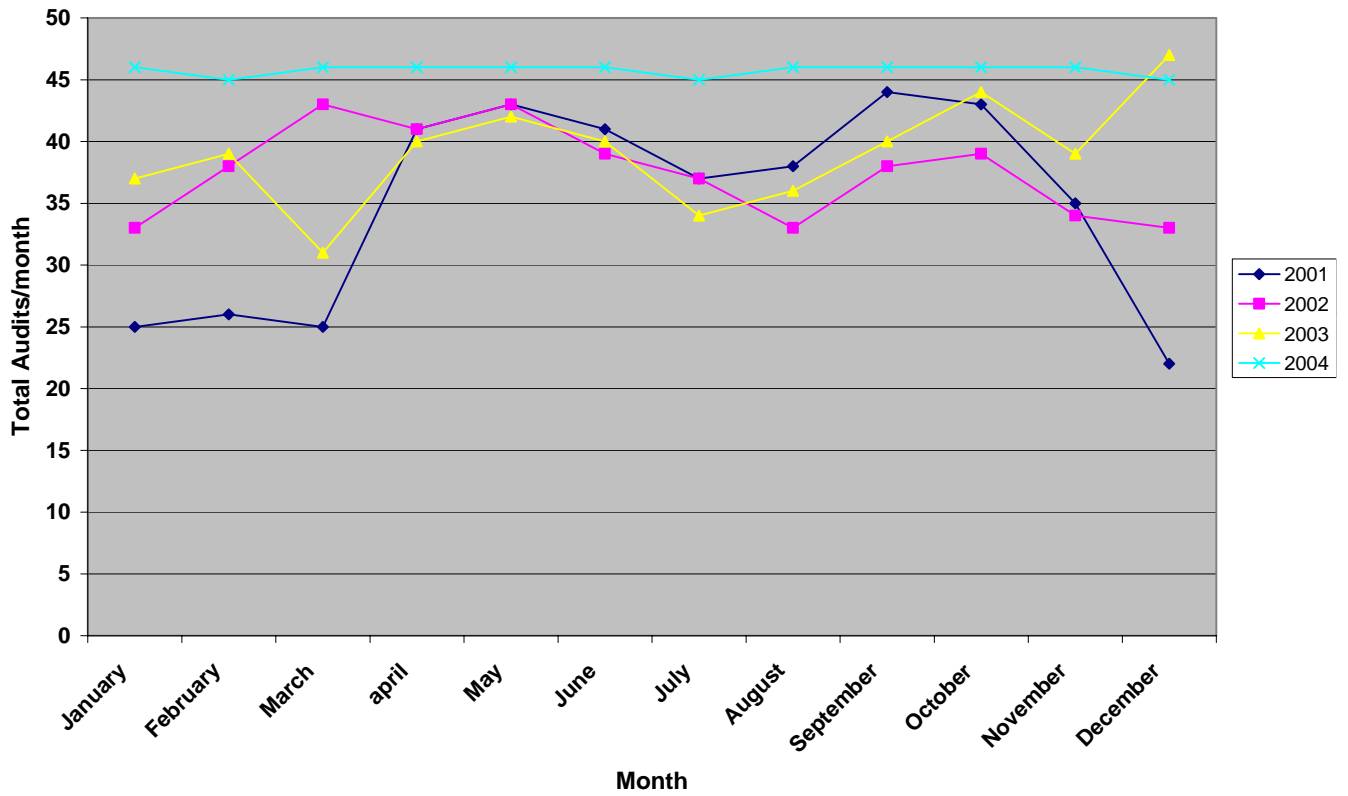
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## ***Conclusion***

- Safety, Health and environmental auditing is used in PIC to verify that facility procedures and practices comply with legal requirements and internal policies and conform to good safety, health, and environmental practices.
- Safety Audits detects potential hazards & correct them before incidents occur.
- Safety Audits improves PIC operations, increases efficiency, effectiveness, & profitability.
- Involving all levels of employees in safety audits increases Safety, Health & Environment awareness.
- Safety Audit in PIC plays an important role in achieving 3 Million man-hours without lost work case incidents.
- Safety Audit contributes in obtaining the ISO-14001 in PIC.

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### Total Audits - Monthly Wise



### Audits & Actions

