

ANALYSIS THE IMPLEMENTATION OF QUALITY AND ENVIRONMENTAL MANAGEMENT IN PETROCHEMICAL INDUSTRIES

(Study Case: PT. Chandra Asri Petrochemical, Indorama Ventures Industry, Sidi Kerir Petrochemicals Co.)

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ABSTRAK

Industri Petrokimia menghasilkan produk yang berguna termasuk plastik, karet sintesis, pelarut, pupuk, produk farmasi, aditif, bahan peledak dan perekat, menghasilkan limbah yang dapat menyebabkan masalah lingkungan dalam proses produksi. Untuk itu perusahaan perlu mendapatkan pengakuan internasional yang menyatakan bahwa produk dan sistem manajemen mutu dan sistem manajemen lingkungan yang digunakan telah sesuai dengan standar. Standar internasional mengenai manajemen mutu dan manajemen lingkungan yang biasa digunakan adalah ISO 9001:2015 dan ISO 14001:2015. Studi ini bertujuan untuk mengidentifikasi dan komper strategi yang baik dari tiga perusahaan Petrokimia dalam menerapkan ISO 9001:2015 dan ISO 14001:2015. Data yang digunakan adalah laporan tahunan dari perusahaan mengenai penerapan ISO tersebut. Dari hasil menunjukkan bahwa Annual report yang Indonesia lebih dijabarin jelas. Dibagi per bagian dengan detail. dan PT. Chandra Asri Petrochemicals and Indorama Ventures telah menerapkan strategi yang sesuai dengan ISO 9001:2015 and ISO 14001:2015. Dalam menerapkan ISO 9001:2015 dan ISO 14001:2015 setiap perusahaan memiliki strategi nya sendiri untuk dapat mempertahankan daya saing pasar dan dalam menciptakan daya tarik produk dengan mementingkan dampak terhadap lingkungan.

Kata Kunci: *Perusahaan Petrokimia, Sisem Manajemen Mutu, Sistem manajemen Lingkungan*

ABSTRACT

The Petrochemical industry produces useful products including plastics, synthetic rubber, solvents, fertilizers, pharmaceutical products, additives, explosives and adhesives, producing waste that can cause environmental problems in the production process. For this reason, industries must meet international standard and get the recognition that stating their quality and environmental management systems are in accordance with the standards. The international standards regarding quality and environmental management used are ISO 9001: 2015 and ISO 14001; 2015. This study aims to identify and compare good strategies from three Petrochemical companies in implementing ISO 9001; 2015 and ISO 14001; 2015. The data used is an annual report from the company regarding the application of the ISO. From the results shown the annual report that Indonesia is more clearly explained. Divided per section in detail and PT. Chandra Asri Petrochemicals and Indorama Ventures have implemented strategies that are in accordance with ISO 9001: 2015 and ISO 14001: 2015. In implementing ISO 9001: 2015 and ISO 14001: 2015, each company has its own strategy to be able to maintain market competitiveness and in creating the attractiveness of products by emphasizing the impact on environment. Annual report yang Indonesia lebih dijabarin jelas. Dibagi per bagian dengan detail dan PT. Chandra Asri Petrochemicals and Indorama Ventures telah menerapkan strategi yang sesuai dengan ISO 9001:2015 and ISO 14001:2015.

Keywords: *Petrochemical company, Quality management system, Environmental management system,*

INTRODUCTION

Nowdays the Competition in the manufacturing industry is getting tougher. All companies are competing to be able to survive and compete in the national and global market. In order to be competitive on both a national and a global basis, organizations must adopt a forward-thinking approach in developing their management strategies. The most common strategy that use as a foundation of a successfull strategy is management system that may be documented and well-defined how things are done or defines how work is done, the desired outcomes, and the controls imposed to ensure those outcomes (*Spencer Hutchens*)^[1]. Companies must produce quality products and environmental friendlly. This is done so that customers do not move to other similar products.

The petrochemicals industry has evolved out of oil and gas processing by adding value to low value by - products, which have limited use in the fuels industry. The industry now manufactures a remarkable range of useful products including plastics, synthetic rubber, solvents, fertilizers, pharmaceutical products, additives, explosives and adhesives. These materials are widely used in nearly every area of modern society. To name just a few of the common applications, petrochemical products are used in cars, packaging, household goods, medical equipment, paints, clothing and construction material. The petrochemical industry generally has three types of was\which can cause pollution problems to the environment. The three types of pollutants are: gas (air pollutant) such as SO₂, CO, CO₂, etc, liquid or solution (water pollutant) such as organic phenol

waste, heavy metals and solids waste such as mud, catalysts and others. Because of the product of petrochemical companies are become society daily need its need to be in good quality and also because of the waste that produce during process of production can cause problem to environment, the companies need to implement quality and environmental management system, also must be complied to international standard ISO 9001 and ISO 14001^[2].

The International Standardization Organization is ISO. In all regions of the world, ISO is a member of some 160 national standards bodies from large and small countries, industrialized, developing and in transition. ISO standards provide solutions and achieve benefits for almost all sectors of activity, including agriculture, construction, mechanical engineering, manufacturing, distribution, transport, medical equipment, information and communication technologies, environment, energy, quality management, conformity assessment and services. ISO 9001 and ISO 14001 help companies to better control its processes. ISO 9001;2015 and ISO 14001;2015 about Management of quality (QM) and environmental management (EM) in business practices that can benefit businesses. As several empirical studies show, Quality Management and Environmental Management effectively influences company performance.

Total Quality is an effective system that integrates all efforts to define, design, manufacture and install a product or service that costs as cheaply as possible and provides total customer satisfaction. ISO standards and the certification process based on these standards have marked the consolidation scenario Quality systems in Europe and around the world have decided to comply with the requirements of the ISO 9000 Standard ISO 9001 informs managers about the significant advantage and raises awareness of it. In order to improve their competitiveness and consequently their business results, an objective and realistic implementation of a quality management system can be achieved in their organizations^[3].

ISO 9001:2015, published on September 2015, incorporates the risk-based Systems Quality Management approach. Although it is, a commonly applied technique so far was not aligned with the quality management system. ISO 14001:2015, published on September 2015, considered the prospect lifecycle, risk management or improving environmental performance and ensures organizations full integration of environmental management strategies business.

At present, petrochemicals are the largest industrial chemicals sector, accounting for 40 percent of the global market for chemicals of around € 2.65 billion in 2016. The majority of all chemicals shipped between the world's continents are petrochemicals. They are organic chemicals derived from oil, but can also be defined as chemicals produced, usually in bulk, from raw materials of carbon and hydrocarbon, including coal, natural gas and renewable alcohols. They have a history-stretching back to the 19th century in part that has suffered many economic, commercial, technological and logistical changes, to which the industry has shown extraordinary resilience in adapting. However,

there have also been underlying trends from the beginning that have remained constant and continue to shape the industry today^[4].

The purpose of this study was to find out the suitability of the strategy carried out by the company in developing an environmental management system based on international standards ISO 9001: 2015 for quality management systems and ISO 14001: 2015 for environmental management systems.

METHOD

In this study the method used is by reviewing three reports from petrochemical companies that have implemented strategies for quality management systems and environmental management systems and already obtained ISO 9001; 2015 and 14001; 2015 certificates as companies whose quality management systems and environmental management systems have meet international standards.

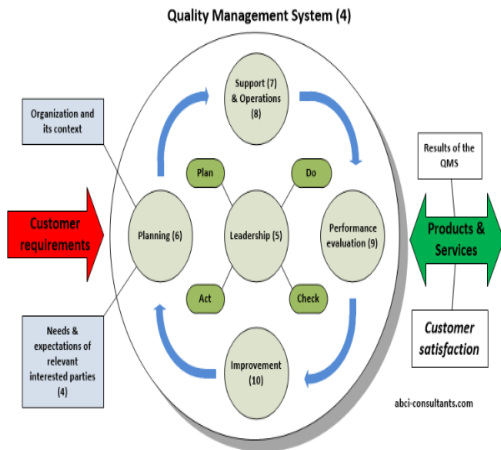
RESULT AND DISCUSSION

The certification of ISO 9001 will provide the company with maximum benefits if ISO 9001 is carried out correctly and practically. With this correct implementation, the Quality Management System will ensure that it is adopted, works to improve business and not just a set of procedures that are stored and displayed and used during audits. The company will achieve a system that helps and supports the company in increasing customer satisfaction by adopting a good process approach with more efficient work practices and focusing on the company's business goals.

Certificate ISO 14001 to be recognized by becoming one of the companies that care about the environment and can reduce negative environmental impacts. Of course, there will be a better relationship for the organization and other benefits and benefits with customers, suppliers and suppliers as well as the wider community in general. By implementing the environmental management system ISO 14001, the organization's budget can certainly be saved and other benefits can be achieved and added value in the eyes of the wider community. To achieve this, it can be done by minimizing incidents and incidents that can consume the company's budget, for example, by following an insurance program at an affordable cost and by using the reduction method to preserve input materials and energy.

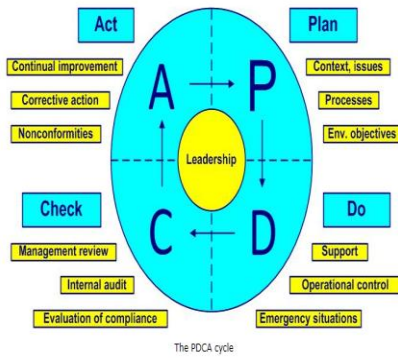
The data taken from the three companies is the annual report of the results of the implementation of the management system Quality and system of environmental management in each company after retrieving the data compiles and analyzes how the company has implemented international standards or ISO 9001 and 14001 correctly.

To successfully lead and operate an organization, it must be systematically and transparently managed and controlled. The implementation and maintenance of a management system designed to continuously improve performance while addressing the needs of all stakeholders can be successful. Among other management disciplines, the management of an organization includes quality management^[4].



(Figure 1. abci.consultant.com)

The requirements in clauses and sub-clauses of the ISO 14001: 2015 standard



(Figure 2. The Plan,Do,Check,Act)

Analysis of Implementation of ISO 9001: 2015

There are seven principles contained in the ISO 9001: 2015 Quality Management System that must be applied, and the industries has implemented as follows:

No	7 Principle in ISO 9001:2015	Name of Industry	Description
1.	Customer Focus	PT. Chandra Asri Petrochemical	The company prepared Activities to carried out in ensuring the products issued in accordance with customer demand and needs like : Technical service assistance, Mass Product Socialization,customer events, Annual Customer Survey.
		Indorama Ventures Industry	Open customer feedback communication channels and integrating social and

No	7 Principle in ISO 9001:2015	Name of Industry	Description
			environmental aspects into our corporate strategy and decision-making.
		Sidi Kerir Petrochemicals Co.	provide the customer with fair and transparent information of the products, the Company always takes appropriate action to protect the health, safety and business of their customer “Refer to Company’s policy”
2.	Leadership	PT. Chandra Asri Petrochemical	The company's leadership has a strong commitment in receiving the existing training and provided learning and development program.
		Indorama Ventures Industry	Provide fair and equal opportunities for all, without discrimination.
		Sidi Kerir Petrochemicals Co.	Conduct a training at every level of the organization
		PT. Chandra Asri Petrochemical	The implementation of training from each organizational structure that is carried out systematically and produce comfortable work environment.
		Indorama Ventures Industry	The implementation of training from each organizational structure that is carried out systematically and produce comfortable work environment.
3.	People's involvement	Sidi Kerir Petrochemicals Co.	The implementation of training from each organizational structure that is carried out systematically and produce comfortable work environment.
4.	Process Approach	PT. Chandra Asri Petrochemical	Meet the customer target,satisfies and the company practically structured.
		Indorama Ventures	Meet the customer target,satisfies and the

No	7 Principle in ISO 9001:2015	Name of Industry	Description
5.	<i>Improvement</i>	Industry	company practically structured.
		Sidi Kerir Petrochemicals Co.	Meet the customer target, satisfies and the company practically structured.
		PT. Chandra Asri Petrochemical	The company applying the "Kaizen Principle, improvements to social facilities and infrastructure, improve audit activities at all levels.
6.	<i>Decision-based decision making</i>	Inorama Ventures Industry	prioritizing sustainability through our proven business model, deploying the resources to support the circular economy.
		Sidi Kerir Petrochemicals Co.	improve the performance of all level of the company's organization and continuous improvement.
6.	<i>Decision-based decision making</i>	PT. Chandra Asri Petrochemical	Shareholders and majority vote for a follow-up.
		Inorama Ventures	Seeking professional opinions and Board

1. Customer Focus

In fulfilling the expectations of its customers, each company always prioritizes the needs of its customers by paying attention to each proposed criterion. And this is the strategy carried out by each company.

1.1 PT. Chandra Asri Petrochemical

Activities carried out in ensuring the products issued in accordance with customer demand and needs are realized with the following activities:

- Technical service assistance
The company provides technical assistance to customers in order to help them find the best solution in case of technical problems and also to improve the quality of finished products. The company also helps customers develop products based on market trends and customer needs and cooperates with them.
- Mass Product Socialization
This is a service that aims to regularly educate people. The forms include in-house training, technical service for new grades / products, technical training and product compliance.
- Customer events

In 2017, the Company held three Annual Customer Appreciation Gatherings.

- Annual Customer Survey

No	7 Principle in ISO 9001:2015	Name of Industry	Description
7.	<i>Relationship Management</i>	Industry	meetings.
		Sidi Kerir Petrochemicals Co.	Accordance with Company goals and are based on factual data and gain credibility.
		PT. Chandra Asri Petrochemical	Providing training, education that is feasible, comfortable and the income earned.
7.	<i>Relationship Management</i>	Inorama Ventures Industry	providing carrying capacity to meet consumer needs, Providing training, education that is feasible, comfortable and the income earned and conducts social development.
		Sidi Kerir Petrochemicals Co.	Fund provides health services such as operations, medicines, chronic treatment to the workers and Providing training, education that is feasible, comfortable and the income earned

(Table.1 comparison of quality management strategies in three petrochemical industries)

The company is conducting a customer survey. The survey is important in order to gain feedback about the company in order to help it improve its products and services. As well as developing products with the method of "Product Development Stage-Gate Process".

1.2 Inorama Ventures

- Ensure that our services are delivered in accordance with our customers' expectations through the application of international quality management standards, for example. Standard 9001.
- Continually improve customer satisfaction levels by maintaining open customer feedback communication channels.
- Provide continuous value creation and provide our customers with the best value by integrating social and environmental aspects into our corporate strategy and decision-making.

1.3 Sidi Kerir Petrochemicals Co.

In prioritizing the needs of the company's customers always provide their customer with fair and transparent information of the products, and also offer adequate and efficient support and advice system for their customer. The review of the customers complaints is the way for the company to improve the products or practices in response

to the customer. And the important things is the Company always takes appropriate action to protect the health, safety and business of their customer "Refer to Company's policy".

2. Leadership

1.4 PT. Chandra Asri Petrochemical

In fully approving ISO 9001: 2015, the company's leadership has a strong commitment in receiving the existing training. The company provides learning and development programs to ensure that the company has everything related to expertise and work experience that matches the values and values that are appropriate.

1.5 Indorama Ventures

In leadership the company does not yet have a strong commitment in receiving the existing training. Provide fair and equal opportunities for all, without discrimination, according to the skills of an employee in terms of employment, opportunities for development and compensation.

1.6 Sidi Kerir Petrochemicals Co.

Based on the principle to produce the best quality of service the company makes strategies and policies that are used to have standards that must be obeyed to meet the desired targets. Therefore, in applying the principles of ISO 9001: 2015, company leaders conduct training at every level of the organization to develop employee knowledge about the importance of awareness of the quality and provide awareness to each employee of the importance of quality management is.

3. People's involvement

This principle is to understand how companies make improvements and work together to get better results and produce a comfortable ape environment.

1.7 PT. Chandra Asri Petrochemical

In this case, the company has understood the importance of quality management in the company's operations. This is due to the implementation of training from each organizational structure that is carried out systematically well. In addition, it can be seen from the improvement activities carried out by the company well and can produce a comfortable work environment.

1.8 Indorama Ventures

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1.9 Sidi Kerir Petrochemicals Co.

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the company well and can produce a comfortable work environment.

4. Process Approach

1.10 PT.Chandra Asri Petrochemical

In applying this principle the company has explained the job description of each company unit, and the business activities carried out by the company are practically structured. And from each unit has worked as much as possible and runs in a related process, resulting in production output that satisfies and meets the target customer.

1.11 Indorama Ventures

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5. Improvement

1.13 PT. Chandra Asri Petrochemical

In achieving sustainable success on an ongoing basis improve the quality of products and services by applying the "Kaizen Principle", based on Japanese philosophy which means focusing on continuous development and improvement. In addition, the company has made improvements to social facilities and infrastructure that aim to encourage economic growth and improve the quality of life for the surrounding community. To improve audit activities at all levels, the company provides a means of improvement and objective information. Meanwhile, in increasing production, the company implemented an efficient program by reducing energy and reducing operating costs per unit. Developing new customers is one of the way to increasing the domestic and export market share, in addition to meeting the demand for labor abroad.

1.14 Indorama Ventures

Satisfaction means continuous improvement for them, and while they have made significant improvements since the start, a plan to raise the bar ever higher. This means prioritizing sustainability through our proven business model, which evolves over time and maintains strong organizational agility in order to take advantage of opportunities.

In fulfil the gaps which are intrinsic to company sustainable and profitable future by deploying the resources to support the circular economy. This business will allow the company to continue to provide above industry returns across cycles and counter the inheret volatility in the petrochemical industry.

1.15 Sidi Kerir Petrochemicals Co.

Based on the principles of ISO 9001: 2015 the company must have a focus for continuous

improvement. This improvement is expected to improve the performance of each level of the company's organization. The efforts made by the company include the following:

- Conduct training and awareness training in performance measurement.
- Identify gaps and differences between the existing and best practice performance measurement system.
- Set up a performance measurement monitoring panel that can support continuous improvement using the "Bower BI" software.

6. *Decision-based decision making*

1.16 PT. Chandra Asri Petrochemical

In effectiveness in corporate decision making, it is based on the principles of Good Corporate Governance (GCG). Shareholders are important actors in making important decisions relating to the management of companies that always pay attention to the applicable rules and regulations. And in decision-making related to the continuity and business operations, the meeting's decision are made based on the principle of deliberation or taken by a majority vote for a follow-up.

1.17 Indorama Ventures

If necessary, seeking professional opinions from external agencies to take appropriate decisions. Board meetings done to makes decisions on significant activities by the Company concerning the acquisition and disposition of assets, investment project expansion, policy implementation, and/or risk management etc.

1.18 Sidi Kerir Petrochemicals Co.

Company decisions are taken in accordance with Company goals and are based on factual data. The company also gain credibility by honoring their commitments, showing honesty and integrity and achieving company goals only by honorable behaviour. Management is responsible for demonstrating the importance of this code through its actions.

7. *Relationship Management*

1.19 PT. Chandra Asri Petrochemical

In improving the management of company relations with labor, it is carried out by providing carrying capacity to meet consumer needs. Therefore the company facilitates workforce by providing training, education that is feasible, comfortable and clean. In addition, the income earned is also in accordance with their work. On the other hand, not only are facilities provided to improve worker skills, the company also conducts community social development namely in the form of cooperatives, Gold Melon Cultivation, Fostering Bamboo craftsmen, use of local labor and education, infrastructure improvements, bridge rebuilding, building renovations school, development of Cisiram village. It is hoped that by maintaining the trust that has been ongoing it can meet the demand for labor and dance the interests of prospective workers.

1.20 Indorama Ventures

In improving the management of company relations with labor, it is carried out by providing carrying capacity to meet consumer needs. Therefore the company facilitates workforce by providing training, education that is feasible, comfortable and clean. In addition, the income earned is also in accordance with their work. On the other hand, not only the facilities provided to improve the skills of workers, the company also conducts social development, namely by providing health and safety, human capital development, and human rights. It is hoped that by maintaining the trust that has been ongoing it can meet the demand for labor and dance the interests of prospective workers.

1.21 Sidi Kerir Petrochemicals Co.

In improving the management of company relations with labor, it is carried out by providing carrying capacity to meet consumer needs. Therefore the company facilitates workforce by providing training, education that is feasible, comfortable and clean. In addition, the income earned is also in accordance with their work. On the other hand, not only facilities are provided to improve the skills of workers, the company also conducts social development, namely for individual cases that are not covered by insurance, SIDPEC provides health care. In one of the distinguished charitable hospitals, the SIDPEC is a treatment fund that is financed with approximately 300,000 EGP. In accordance with strict conditions and standards, this fund provides health services such as operations, medicines, chronic treatment, etc., according to strict standards and conditions. To recover this fund, SIDPEC constantly provides another amount. It is hoped that by maintaining the trust that has been in place it can meet the demand for labor and dance the interests of prospective workers.

Analysis of Implementation of ISO 14001: 2015

1.1 PT. Chandra Asri Petrochemical

The company continually seeks materials and energy consumption in its business operations and is environmentally friendly and recyclable. In this context, the company is guided by the CSR Guidelines for Environmental Affairs for the systematic, integrated and sustainable implementation of CSR in the field of the environment.

- Clean Production, Semi - bulk containers were used for transport as a measure to help minimize waste. The containers replace the use of jerry boxes that can be used only once
- The Company always strives to optimize:
 - Raw materials used in all sectors of business.
 - Ethylene recovery from flaring to process.
 - Bleed gas recovery from the HDPE plant.
 - Propane gas recovery from the polypropylene plant to the ethylene plant.
 - Electricity efficiency in HDPE and LLDPE plants.
- Eco-Office :
 - Go Paperless: The company continues to move from conventional licensing to digital form.
 - Power Save: The company encourages everyone to turn off power when not only in the workplace, but also outside the office.

- Water Conservation: In the company's office and plants, the company fully supports the water saving campaign.

- Renewable Energy
The Company use Turbine Ventilator at all of the Company's warehouse and workshop.
- Waste Management
The Company implements the 3R principle as well as undertake safe disposal. And also categorized types of waste into two groups, hazardous and toxic waste (B3) and non-B3 waste and the Company cooperation with the Waste Management that meets Indonesia and international regulatin standards.
- Complaints Mechanism of Environmental Problems
In line with efforts to always protect environmental sustainability from the impact of its operations, the Company shall take preventive measures and management of environmental impacts and open communication lines in order to address any public input or complaints related to environmental issues. Community complaints received by the company through the Community Relations Division, both written and unwritten. In addition, the Division of Community Relations shall forward the report to the relevant internal divisions, such as SHE, Manufacturing, CSR, HR, in order to carry out an investigation. If it turns out that the complaints are not valid after the investigation, the results will be communicated to the plaintiff and the complaints mechanism will be completed. However, if a new progress is found after an investigation, which shows that the complaint is valid, corrective / preventive measures would be followed up.

1.2 Indorama Ventures

IVL has innovation management in terms of environment protection. In water management IVL is committed to sustainable water management (including water withdrawal and discharge) by complying with all applicable environmental laws, international standards and regulations in the countries in which we operate, and will proactively demonstrate leadership and responsibility in accordance with our values. In Product Stewardship they continue to lower toxicity by :

- Ensure compliance with products used by customers or end users
- Reduction of the impact of toxicity during the production process
- Emissions avoidance.
- Continue to reduce our environmental footprint by improving our production processes' environmental performance, including energy, water, greenhouse gas (GHG) and waste reduction targets.
- The adoption of voluntary commitments, rules and guidelines in the regions and countries in which we operate complies with applicable national and international legislation, regulations and regulatory obligations.
- Improve the sustainability of our operations with a focus on eco-efficiency in operations, minimize negative impacts and optimize environmental and economic benefits.

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- Progressively obtain and maintain environmental management on the basis of ISO14001 certification and ISO 50001 standards for energy management.
- Integration of the product's environmental aspects in the development stage of the product.
- Assess and mitigate the impact of our products on the environment through our Life Cycle Assessment (LCA) program in its value chain associated with GHG emissions and product toxicity.
- Promote a circular economy and use of resources more efficiently through greater reuse and recycling.
- Encourage employees and external stakeholders' environmental awareness and environmental protection through campaigns, advertising, education and CSR programmes.

1.3 Sidi Kerir Petrochemicals Co.

In environment protection SIDPEC is committed to protecting the surrounding community's environment starting with the selection of used raw materials and the end of the safe disposal of waste resulting from the various works of the company. There are SIDPEC environment performance :

- Compliance with the Egyptian Environmental Law concerning hazardous solid waste disposal: All hazardous waste was disposed of by sending it to a landfill area (15 tonnes).
- Compliance with the Egyptian Environmental Law on the disposal of non-hazardous solid waste: The sale of all non-hazardous solid waste disposal to one of the contractors (30 tonnes).
- Compliance with the Egyptian Environmental Law on the disposal of consumed oils: The sale of all non-hazardous solid waste disposal to El-Seham Petroleum Company (33.5 tonnes).
- Measurements of gas at all sites: Twice a year.
- Noise measurements in all sites: Performed once every three months per year.
- Radiation elements: Follow up all activities performed twice per month.

The company committed to operate their processes in a manner that minimizes the environmental impact to the minimum limits.

CONCLUSION

The annual report that Indonesia is more clearly explained. Divided per section in detail. The PT. Chandra Asri Petrochemicals and Indorama Ventures have implemented strategies that are in accordance with ISO 9001: 2015 and ISO 14001: 2015. Although, there are obstacle. And Based on our opinion Sidi Kerir Petrochemicals Co. Not able to implement well because of the lack of data obtained in analyzing the strategies carried out by the company. In addition, the possibility of internal company barriers has resulted in a lack of company management. However, Sidi Keriri Petrochemicals has excelled in providing training to company managers and staff in implementing awareness of the importance of the quality management system. In implementing ISO 9001: 2015 and ISO 14001: 2015, each company has its own strategy to be able to maintain market competitiveness and in creating the attractiveness of products by emphasizing the impact on environment.

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