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Review Article

Technical and Managerial Quality System for the Sustainability of the Oil Sector

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Abstract

The quality of administration and technical aspects in the oil sectors are essential to sustain its consumption in the future. The oil companies have developed its vision in getting ISO 9001:2015, ISO 45001:2018, ISO 14001:2015. These codes are essential in development in the continuity of administration procedures of quality system, occupational health, safety, and environment. It was found that the oil company need improve the performance through licensing other ISOs such as ISO 31000:2018, ISO 27001:2013, and ISO 50001:2018 for the risk assessment, information technology, and energy saving respectively. The technical product quality and green projects can be achieved by aiming and application of the modern international codes related to the product quality and environment.

Keywords: Integral management system; Sustainibilty development; decontamination; Continuous improvement

Introduction

The oil industry's quality system covers emissions, legal compliance, governance, and sustainability. It has driven global development but also caused environmental harm. To stay competitive, it must reduce emissions amid the shift to renewables [1,2].

This management focuses on several important areas, such as innovating solutions to reduce emissions from fossil fuels and improving air quality. Efforts are directed towards developing and adopting new technologies that contribute to emission reduction. Policies and guidelines are also developed to control fossil fuel emissions, ensuring companies and institutions adhere to these policies.

Legal compliance, research outputs, and Electronic governance are essential in the oil sector. This means adhering to local and international laws and regulations related to safety, environment, and workers' rights, achieving technical, managerial, and financial quality in the oil sector. Oil companies and institutions must implement best practices and utilize available technology and scientific research to enhance quality and contribute to sustainable development.

Background Overview

Karmalla et al. (2013) mapped Carbon monoxide (CO) levels in Basra City over three days in March 2012 using 34 sampling stations and a calibrated QREA II gas monitor. Isoclines were used to display spatial CO variations. The study estimated that approximately 75% of the surveyed areas and population might be impacted by CO pollution, with potential exacerbation due to expected increases in urban gaseous emissions in the area [3].

Al-Tamimi et al. (2020) emphasize the significance of conducting environmental audits in public companies, particularly the South Oil Company, due to its substantial gas emissions and associated environmental health hazards. The study is structured into three sections: methodology, theory, and practice. The findings underscore the necessity of environmental audits in public companies for mitigating environmental risks. However, this requires legal regulations, external oversight, and a modification of the current accounting system that lacks environmental considerations [4].

Junh et al. (2021) examined the environmental consequences of the Baghdad industrial cycle refinery complex, encompassing

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gaseous emissions, liquid and solid waste, and visual and auditory pollution. The root cause of these issues is primarily linked to the inadequate development and upkeep of the complex facilities, which should align with global oil industry standards. Their research combined desk research and a questionnaire distributed to 400 respondents, yielding noteworthy insights into the pollution levels produced by the complex [5].

Khalaf et al. (2022) address the detrimental environmental effects of industrial operations, notably gas emissions, exacerbated by rising energy demand and population growth worldwide. Their study centers on the North Gas Company in Kirkuk, Iraq, employing econometrics to assess the connection between the company's production and carbon dioxide emissions. The findings indicate a negative environmental impact, leading to short-term health concerns and contributing to long-term global warming [6].

Mousa et al. (2022) enhanced the environmental and financial performance of Kufa Cement Factory by adopting cleaner production techniques. Their research incorporated deductive and inductive approaches, combining theoretical analysis with practical aspects involving interviews, field visits, and data access. The study revealed that certain raw materials generated volatile dust with adverse environmental effects, initially considered environmental costs. However, with the implementation of cleaner production methods, this dust transformed into a valuable final product. Additionally, the study recommended the use of modern emission measurement devices and employee training to minimize adverse effects on both human health and the environment [7].

In Al-Amarah, Maysan governorate, Al-Shammari et al. (2022) discovered that carbon dioxide (CO2) was most prevalent, especially in summers, while Hydrogen Sulfide (H2S) was least prevalent, mainly in winters. Private electric generators and commercial/service activities were the primary sources of emissions. These emissions affected climatic elements observed at the Climate Architecture Station during the same months [8].

Risk Assessment of Fossil Fuels

Technical evaluation of feedstock and Product quality

Crude oil is a complex mixture of hydrocarbons containing undesirable elements such as sulfur, nitrogen, oxygen, metals, and halogenated compounds. Sulfur, in particular, poses a significant problem as it can lead to the formation of Sulfur Oxides (SOx) during combustion, contributing to environmental issues. Nitrogen and oxygen can result in emissions like Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOCs). Metals like nickel and vanadium may cause equipment corrosion and refining challenges. Halogenated compounds, including chlorinated and fluorinated hydrocarbons, are generally harmful to both human health and the environment. Managing and minimizing these impurities in crude oil is essential to reduce their adverse impact. Furthermore, oil contributes to greenhouse gas emissions, primarily through Carbon Dioxide (CO2) released during combustion. Other greenhouse gases like methane (CH4) and Nitrous Oxide (N2O) are also emitted during oil production, albeit to a lesser extent. Additionally, oil extraction and transportation can release pollutants such as Sulfur Dioxide (SO2), Nitrogen Oxides (NOx), and particulate matter, posing risks to human health and the environment.

Salt content limits might be by either of the following:

- Transportation requirements in the production field or shipping terminal

- Concerns over corrosion, fouling, or catalyst degradation in the refinery crude oil salts= 29mg/L, water= Nill

Occasionally, these criteria do not meet and misoperation occurs to produce high oily water to the pond.

To mitigate the sulfur negative impacts, regulations have been put in place to limit the amount of sulfur in fuels, such as the International Maritime Organization's (IMO) sulfur cap on marine fuels, and the US Environmental Protection Agency's (EPA) Tier 3 emissions standards for gasoline. Additionally, technologies such as desulfurization processes and catalytic converters can be used to reduce sulfur emissions.

Occupational and Society HSE

The acid rain damages crops, forests, and aquatic life, and corrodes buildings and infrastructure. Biomagnification resulting in the poisoning of animals and significant impacts on ecosystems “disruption”. Depletion of the Earth's ozone layer, resulting in increased levels of ultraviolet radiation that can lead to skin cancer and cataracts.

It's important to note that emissions from one location can also travel through the atmosphere and affect air quality and climate in other regions, particularly for pollutants that have long lifetimes in the atmosphere such as greenhouse gasses.

Economic Impact of Fossil Fuels

Fossil fuels play a pivotal role in the global economy due to their crucial role in energy production and distribution. The energy sector, encompassing fossil fuel production and consumption, is a substantial contributor to global GDP and a major source of employment worldwide. However, this economic significance faces growing challenges from environmental and social concerns, as well as competition from renewable energy sources. Policymakers, businesses, and consumers must carefully weigh the economic, environmental, and social consequences of fossil fuel usage, and actively pursue a more sustainable and equitable energy future. In Iraq, where fossil fuels contribute over 90% of the financial balance, addressing emissions and refining fossil fuel marketing strategies is imperative.

Quality Assurance and Control

The Quality Assurance (QA) may be achieving by using low sulfur feeds. The Quality Control (QC) may be achieving by application of regualtions of Clean Air Act of EPA and EU legistlations. There are some related conventions as following:

- **United Nations Framework Convention on Climate Change (UNFCCC):** This convention defines the goals and actions that must be taken to mitigate climate change.

- **United Nations Convention on the Law of the Sea (UNCLOS):** This convention defines the rights and responsibilities of coastal states and ships at sea.

- **International Convention for the Prevention of Pollution from Ships (MARPOL):** This convention defines the rules and regulations that govern the prevention of marine pollution from ships.

- **Kyoto Protocol: This protocol was adopted in 1997, and it requires developed countries to reduce their greenhouse gas emissions.**

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, also known as the Basel Convention, is an international treaty that was designed to reduce the transboundary movement of hazardous wastes, and to minimize any adverse effects of their management on human health and the environment.

There are many agreements relating to emissions, but the most important is the United Nations Framework Convention on Climate Change (UNFCCC). This convention was adopted in 1992, and it sets a global framework for action on climate change. **The UNFCCC requires Parties to take measures to re**duce greenhouse gas emissions. Parties have agreed to a mid-term goal of limiting global warming to 2 degrees Celsius above pre-industrial levels, with efforts to limit it to 1.5 degrees Celsius. In 2015, the Parties to the UNFCCC agreed to the Paris Agreement. The Paris Agreement sets a more ambitious framework for reducing greenhouse gas emissions. Parties to the Paris Agreement commit to taking action to reduce their greenhouse gas emissions to net-zero levels as soon as possible. This convention confirmed CCS in 2018, and it sets a framework for international cooperation in the field of carbon capture and storage. The Convention requires Parties to take measures to promote carbon capture and storage, and to exchange information and knowledge about these technologies. The CCS Convention aims to contribute to efforts to reduce greenhouse gas emissions. By capturing carbon dioxide from industrial and commercial facilities and storing it underground, carbon dioxide can be removed from the atmosphere and prevented from being released into the atmosphere.

The goal of CCS is to prevent carbon dioxide emissions from entering the atmosphere and contributing to climate change. By storing carbon dioxide underground, it is effectively removed from the carbon cycle and prevented from contributing to the greenhouse effect. However, the long-term safety and effectiveness of this method is still being studied and debated. Implement carbon capture, utilization, and storage (CCUS): CCUS technologies can capture carbon dioxide emissions from oil and gas operations and store them underground or use them for other purposes. Implementing CCUS technologies can significantly reduce emissions from the industry. This technology captures carbon dioxide emissions from power plants and other industrial facilities and stores it underground or in other long-term storage facilities. Whereas, the carbon emission from global refining is 10.1–72.1 kg/bbl.

Overall, the choice of method depends on the specific properties of the oil and the desired level of contaminants removal. A combination of these methods can be used to reduce the problems associated with contaminants compounds in oil and improve fuel efficiency and emissions. It's important to note that each of these methods has its own advantages and limitations, and the effectiveness of each method depends on the specific contaminants and conditions involved. Therefore, a combination of different methods may be required for effective removal of halogenated compounds from oil.

For the safety of equipment, it is required to select the right

Table 1: Technical evaluation of crude oil from Amara oilfield "after the permission of [9]".

Contaminatant	Quantity	Unit
Sulfur	4.7	%
ONS	17.9	%
Ni	27	ppm
V	101	ppm

Table 2: Risk assessment impacts "after permission of [10,11]".

Contaminant	Health	Safety	Environment
Ocygenated compounds **Ex.** Methanol Formaldehyde Ketones	Toxic if ingested or inhaled in high concentrations. Headaches, dizziness, and nausea. Irritate the eyes, nose, and throat and cause respiratory problems. Irritation to the eyes and skin. Harmful effects on the nervous system	Corrosion and wear on machinery, as well as fouling and scaling in pipes and other equipment. Increased combustion emissions, reduced fuel efficiency, and damage to engine components	Smog and ground-level ozone, which can harm vegetation, wildlife, and reduce air quality.
Nitrogen compounds	Respiratory problems	Corrosion in refining equipment and reduce the efficiency of Catalytic processes	Acid rain Smog Air pollution Climate change Ozone depletion
Sulfur compounds	Irritation on eye, headaches, and nausea, and respiratory irritation especially in those with pre-existing lung conditions like asthma such as chronic bronchitis and emphysema. Respiratory illness, cardiovascular disease, and premature death	Corrosion of metal parts in engines and other equipment, reducing their efficiency and lifespan	Smog and other air pollutants. Acid rain can cause harm to buildings, forests, crops, and bodies of water, as well as lead to corrosion of infrastructure and monuments. climate change by forming sulfate aerosols, which can reflect incoming sunlight and cool the Earth's surface.
Metals • Arsenic, Cadmium, Chromium, Lead, Mercury, Nickel, Vanadium	**Respiratory problems** **Eye irritation** **Digestive problems** **Neurological problems** **Cancer**	**Corrosion** **Clogging** **Abrasion**	
Aromatics **VOC, BTEX**	Acute and chronic health effects such as dizziness, headaches, nausea, and respiratory distress, and it damages the liver, kidneys, and central nervous system, and may increase the risk of cancer.		Toxic and harmful to the environment, particularly to aquatic life
Halogenated compounds Chlorofluorocarbons (CFCs), Hydrochlorofluorocarbons (HCFCs), halons	Cancer, reproductive and developmental problems, and immune system damage.	Explosions or fires	Corrosion. Biomagnification Depletion of the Earth's ozone layer. Climate change

materials, regular maintenance, using filters, and corrosion inhibitors.

Sustainability Development Planning of Fossil Fuels

Sustainability management of oil and gas emissions and spills is crucial for protecting the environment and ensuring the long-term viability of the industry. Companies can adopt measures such as using advanced technologies to reduce emissions, implementing robust spill prevention and response plans, and investing in renewable energy sources. By managing their operations sustainably, oil and gas companies can mitigate the environmental impact of their activities and contribute to a more sustainable future.

1. Methods of Technical TreatmentStandardized design according to such as ASMI, ANSI, and API [30].

2. Optimum operation for improvement of whole crude oil and feedstock. The product quality may be achieved by optimum operating conditions to assure the suitable product quality and to avoid the misoperation which leads to VOC emissions and oil spills.

3. Periodecal maintenance plan.

– Emergency response plans must be there to assure the technical spec evaluation to minimize the impact of a spill such as SPCC protocol of EPA. These measures may include equipment maintenance, training for personnel, and the use of spill containment systems. Cleanup and remediation: If a spill does occur, it's important to clean it up as quickly and efficiently as possible. Cleanup may involve the use of booms, skimmers, and other tools to contain and remove the spilled oil. Remediation techniques, such as bioremediation, can also be used to break down the oil and restore the affected area.

1. Waste management: Properly managing waste, including reducing, reusing, and recycling, can help to reduce emissions from landfills. Also, the produced water (oily water) treatment is confirmed to avoid the pollution of soil in addition to evaporation of VOC. This treated water can be reused to separators or injected to disposal wells or to oil well for the purpose of Enhanced Oil Recovery (EOR) [31].

2. Improvement of policy of emissions: as provided in Table (3). Reduction or stopping the flare burning leads to good rsults within global limitations. Improving energy efficiency can help to reduce emissions from oil and gas operations. This can include measures such as upgrading equipment and facilities, optimizing processes, and reducing energy waste. Energy efficiency improvements: Improving energy efficiency can reduce the amount of energy needed to produce a unit of output, which in turn reduces emissions. The efficiency can be improved by application of megnetic field [32].

3. Licensing the suitable operation and measurement standards of ISO, ASTM, API, ASME, ANSI, and related EPA and Europe regulations as mentioned in the following:

Table 3: QA/QC of the technical protection and treatment.

Contaminant	QA	QC
Carbon	Treatment of whole crude oil and its derivatives to remove all the contaminants.	Methane reduction strategy [12] CCS CCUS for the depleted oil and gas reservoirs, saline formations, or coal seams.
Oxygenated compounds	Using lower oxygenate feedstocks or by removing oxygenates during the refining process. Hydroprocessing [13]. Bioremediation “biohydrotreatment” [14]. Chemical treatment	Adsorptive bioremediation [14] Fuel additives can be added to gasoline or diesel fuel to reduce the amount of oxygenated compounds and improve fuel efficiency. Designing to better handle oxygenated fuels and can reduce emissions and improve fuel efficiency. Fuel blending can be used to reduce the amount of oxygenated compounds in gasoline or diesel fuel. For example, blending gasoline with ethanol can reduce the amount of aromatics and oxygenates in the fuel. Exhaust gas treatment.
Nitrogen compounds	Low-nitrogen fuels. Adsorption by activated carbon. Solvent extraction. Denitrogenation by catalytic hydrogenation. Biodenitrogenation.	Selective Catalytic Reduction (SCR) technology. Exhaust Gas Recirculation (EGR)
Sulfur compounds	Using lower sulfur content blending. Using alternative fuels such as natural gas, propane, or hydrogen. Solvent extraction by N-Methylpyrrolidone (NMP) Adsorption by activated carbon or zeolite. Membrane separation according to the molecular size and weight. Hydrodesulfurization (HDS) Oxidative Desulfurization (ODS) Supercritical water desulfurization (WDS). Biodesulfurization (BDS) [15-19]	Scrubbers of flue gasses. Flue Gas Desulfurization (FGD).
VOC	Optimum operation for the separators in the crude oil treatment (COT). Removal techniques [20].	Absorption [21]
Metals	istillation, solvent extraction and filtration [22] **Thermal effect [23]** Hedrotreatment “hydrodemetallization” [24]	**Electrostatic precipitators (ESPs) [25].** **Fabric filters (FFs) [26].** **Wet scrubbers [27].** **Dry scrubbers [28].**
Halogenated compounds chlorinated and fluorinated hydrocarbons	Hydrotreatment [29]	-

Table 4: Basic differences among standards for environment of work.

Standard	Focus	Application	Content
ISO 45001:2018	Occupational health and safety of employees	Any organization	Specific requirements for identifying, assessing, and addressing risks associated with employee health and safety
ISO 22301:2019	Business continuity	Organizations that require business continuity	Specific requirements for identifying, assessing, and addressing risks that could impact business continuity
ISO 31000:2018	Risk management in general	Any organization	A general framework that can be used to manage all types of risks

Table 5: Basic standards for achiving and Document Control (DC).

ISO 15489-1:2016	**Basic requirements** for a records management system
ISO 15489-2:2016	**Guidance on implementation** of a records management system
ISO 30302:2015	**Requirements for an activity document management system**
ISO 30303:2011	**Requirements for bodies providing audit and certification** for an activity document management system
ISO 30304:2011	**Guidance for assessing** an activity document management system

- **ISO 50001:2018** for the energy management. This standard must include the treatment of emissions not the enrgy saving only.

- **ISO/TR 27925:**2023, ISO/DIS 27913, ISO 27916:**2019,** ISO 27917:2017: Carbon dioxide capture, transportation and geological storage or EOR. **ISO 14064** is a standard for emission management: It consists of three parts, the part 1 defines the principles and requirements for designing, developing, managing, and reporting greenhouse gas inventories at the organizational or company level. Part 2 focuses on greenhouse gas projects or project-based activities specifically designed to reduce greenhouse gas emissions or increase greenhouse gas removals. Part 3 provides detailed information on the principles and requirements for verifying greenhouse gas inventories and validating or verifying greenhouse gas projects. **ISO 16759:2017** Gas analyzers for the determination of gaseous pollutants in stationary sources: This standard defines the technical and methodological requirements for gas analyzers to determine gaseous pollutants in stationary sources. **ISO 16760:**2017 Gas analyzers for the determination of gaseous pollutants in mobile sources: This standard defines the technical and methodological requirements for gas analyzers to determine gaseous pollutants in mobile sources. **ISO 16761**:2017 Gas analyzers for the determination of gaseous pollutants in stacks: This standard defines the technical and methodological requirements for gas analyzers to determine gaseous pollutants in stacks. **ISO 16762**:2017 Gas analyzers for the determination of gaseous pollutants in flue gases: This standard defines the technical and methodological requirements for gas analyzers to determine gaseous pollutants in flue gases. **API 560:**2019 Flue gas sampling and analysis: This standard defines the technical and methodological requirements for sampling and analyzing flue gases. **API 561**:2019 Measurement of emissions from stationary sources: This standard defines the technical and methodological requirements for measuring emissions from stationary sources. **API 562:2019** Measurement of emissions from mobile sources: This standard defines the technical and methodological requirements for measuring emissions from mobile sources. **ASTM D 5084:2017** Standard Test Method for Determination of Emissions of Carbon Dioxide (CO2), Sulfur Dioxide (SO2), Nitrogen Oxides (NO_x), and Oxygen (O2) from Stationary Sources: This standard defines the standard test method for determining emissions of carbon dioxide (CO2), sulfur dioxide (SO2), nitrogen oxides (NO_x), and oxygen (O2) from stationary sources. **ASTM D 5085:**2017 Standard Test Method for Determination of Emissions of Carbon Monoxide (CO), Hydrocarbons (HC), and Oxides of Nitrogen (NOx) from Stationary Sources: This standard defines the standard test method for determining emissions of carbon monoxide (CO), hydrocarbons (HC), and oxides of nitrogen (NOx) from stationary sources. **ASTM D 5086:**2017 Standard Test Method for Determination of Emissions of Carbon Monoxide (CO), Hydrocarbons (HC), Oxides of Nitrogen (NO_x), and Particulate Matter (PM) from Mobile Sources: This standard defines the standard test method for determining emissions of carbon monoxide (CO), hydrocarbons (HC), oxides of nitrogen (NO_x), and particulate matter (PM) from mobile sources. ISO/PAS 23263:2019: Emissions of Petroleum products — Fuels (class F).

- **ISO 22115** is a standard for oil spill management. It defines the requirements for an effective oil spill management system. The standard consists of three parts, the part 1 defines the general principles and requirements for an oil spill management system. Part 2 defines the specific requirements for an oil spill management system for companies that own or operate oil storage or transportation facilities. Part 3 defines the specific requirements for an oil spill management system for companies that provide oil spill response services.

- **ISO 14005: 2015** is a standard for waste management. It defines the requirements for an effective waste management system. The standard consists of four parts, the part 1 defines the general principles and requirements for a waste management system. Part 2 defines the specific requirements for a waste management system for companies that produce, own, operate, transport, or dispose of solid waste. Part 3 defines the specific requirements for a waste management system for waste treatment and disposal companies. Part 4 provides detailed information on the principles and requirements for verifying waste management systems.

- **ISO 15278:2013: Defines the requirements for a hazardous waste management system.**

1. Some alternative must not affect negatively the economic of country depending on the fossil fuels as the marketing of the renewable energy sources, like wind and solar power or using low-carbon fuels, such as natural gas or biofuels which can help to reduce emissions from the oil and gas industry. Therfore, the proposed policy is to use fossil fuels with avoing the emissions.

Methods of Managerial Treatment

The managerial treatment can be achieved by using the following criteria:

1. The Continuous improvement system requires a development in the applied softwares of finance, HR, and warehouses. This development assures a better work efficiency.

2. Many oil companies require their suppliers and contractors to obtain ISO 9001, ISO 14001, and ISO 45001 certifi-

cations. This is to ensure that these suppliers and contractors follow responsible and ethical business practices. In addition to these standards, there are also a number of other standards that can be relevant to oil companies. For example, there are standards related to risk management, information technology management, energy management, and supply chain management.

– **ISO 9001: 2015** for the quality management system: This standard is the most widely used in the world for quality management systems. It specifies the requirements that organizations must meet to establish an effective quality management system.

– **ISO 45001: 2018** for the occupational health and safety: This standard specifies the requirements that organizations must meet to establish an effective occupational health and safety management system. It helps organizations protect the health and safety of their employees. ISO 45001:2018 is an international standard that defines the requirements for a Occupational Health and Safety Management System (OHSMS). This standard aims to help organizations improve the safety and health of their workers by identifying and controlling risks.

– **ISO 14001: 2015** for the environmental management: This standard specifies the requirements that organizations must meet to establish an effective environmental management system. It helps organizations reduce their impact on the environment.

These three standards for qualtiy, occupational health, safety, and environment are called the Integral Management System (IMS). There are some complementary and important standards for these IMS such as ISO 22301:2019 of the safety management for international standard that defines the requirements for a Business Continuity Management System (BCMS). This standard aims to help organizations ensure the continuity of their operations in the event of an incident or major event, ISO 31000:2018 of the risk management for an international standard that defines a comprehensive framework for risk management. This standard aims to help organizations identify, assess, and address risks that impact their objectives. This standard may be applied to improve the departments of research and development (R&D) in addition to ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018. Here in Table (4) is the summarization the differences between these standards:

1. **ISO 27001:2013** for IT management.

The document control and archive can be performed by ISO 15489-1:2016 of records management: requirements which defines the basic requirements for a records management system, ISO 15489-2:2016 of records management for the guidelines for Implementation: This standard provides guidance on implementing a records management system, ISO 30302:2015 of activity document management for the implementation guide and application guidelines which defines the basic requirements for an activity document management system, ISO 30303:2011 of activity document management for requirements for Bodies Providing Audit and Certification: This standard defines the requirements for bodies providing audit and certification for an activity document management system, ISO 30304:2011 of activity document management for assessment guideline which provides guidance for assessing an activity document management system. Here in Table 5 is explanation of these standards:

2. **ISO 19011:2018** Auditing Principles and Procedures for Quality Management Systems, Environmental Management Systems, Social Responsibility Management Systems, and Other Management Systems is an international standard that defines the general requirements for auditing, verification, and confirmation of conformity. It can be applied to any management system, including quality management systems, environmental management systems, and social responsibility management systems. The standard consists of four parts. Part 1 contains the general principles for auditing which defines the independence, objectivity, competence, and confidentiality. Part 2 contains the audit procedures which defines planning and preparation, conducting the audit, preparing the audit report, and follow-up. Part 3 is the auditing and verification which defines the differences between auditing and verification, and how auditing and verification can be applied in the context of confirmation of conformity. Part 4 is the confirmation of conformity which defines the requirements for confirmation of conformity, including selecting confirmation of conformity procedures, implementing confirmation of conformity procedures, and preparing a confirmation of conformity report.

3. **ISO 10015:2019** Training Management: in addition to ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018; ISO 10015:2019 Training Management is an international standard that defines the requirements and recommendations for a training management system. It can be applied to all types of training, including internal training and external training. ISO 10015:2019 focuses on the identifying training needs, developing and implementing training programs, and the evaluating training programs.

Conclusion

In conclusion, it is crucial to prioritize the treatment of emissions and contaminants in the oil industry to avoid harmful impacts on the environment, public health, and economic stability. This involves implementing methods to reduce the emissions of sulfur, nitrogen, oxygenated, and halogenated compounds in all stages of the production process, from reservoirs and crude oil to end products and derivatives. Furthermore, controlling emissions after use is equally important, as many pollutants can persist in the environment and have long-lasting effects. By prioritizing the treatment of emissions and controlling their release, the oil industry can not only reduce its impact on the environment but also maintain its competitiveness against the growing renewable energy sector. The economic, social, and environmental benefits of sustainable development practices in the oil industry cannot be overstated. Therefore, it is vital for industry leaders, policymakers, and other stakeholders to work together to implement effective solutions and foster a culture of sustainability in the oil industry.

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