BEST ENVIRONMENTAL PRACTICES AND GUIDELINES

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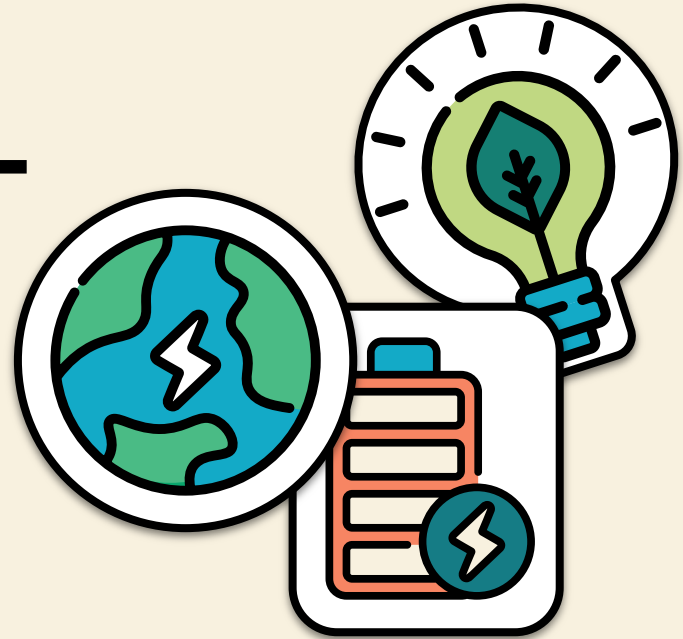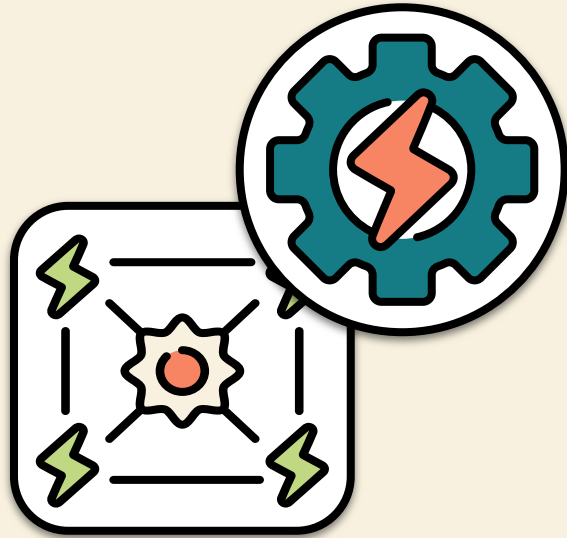
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01

AIR POLLUTION CONTROL DEVICES

INSPECTION OF INDUSTRIES TO CHECK THE INSTALLATION, WORKING CONDITION AND MAINTENANCE OF APCDs INSTALLED

Verification Of Installation

- **Confirm the presence of APCDs in accordance with environmental regulations.**
- **Check the adequacy of APCD installation based on industry type and emission standards.**

Assessment of Working Condition

- Inspect the APCDs to ensure they are operational and effectively reducing emissions.
- Check for signs of wear and tear, corrosion, or damage to APCDs components.

Maintenance Evaluation

- **Review maintenance records and logs to assess the frequency and adequacy of maintenance activities.**

- **Evaluate the cleanliness and condition of filters, scrubbers, electrostatic precipitators, or other APCD components.**

- **Ensure that proper calibration of monitoring instruments has been performed.**

Compliance with Standards & Guidelines

- **Verify compliance with emission standards set by relevant regulatory authorities.**

- **Check if the APCDs are meeting performance parameters specified in environmental guidelines.**

Documentation Review

- **Review documentation related to APCDs, including installation certificates, maintenance records, and compliance reports.**

- **Ensure that all required permits and licenses for APCDs are valid and up-to-date.**

REGULAR REPORTS ON MAINTENANCE OF APCDs FROM LARGE SCALE INDUSTRIES

Reporting Frequency & Format

- **Require large-scale industries to submit quarterly or semi-annual reports detailing the maintenance activities performed on APCDs.**

- **Standardize reporting formats to ensure consistency and facilitate easy analysis of maintenance data.**

Compliance Documentation

- **Industries should maintain comprehensive documentation of maintenance activities, including work orders, inspection reports, maintenance logs, and performance test results.**

- **Ensure that all maintenance records are accurate, up-to-date, and readily accessible for regulatory review and verification**

Data Analysis & Performance Evaluation

- **Analyze maintenance reports to identify trends, patterns, and areas for improvement in APCD performance.**

- **Evaluate the effectiveness of maintenance practices in ensuring the continuous operation and optimal performance of APCDs.**

Continuous Improvement Initiatives

- **Encourage industries to implement proactive maintenance strategies and preventive maintenance programs to minimize downtime and maximize APCD performance.**

- **Facilitate knowledge sharing and best practice dissemination among industries to foster a culture of continuous improvement in air pollution control.**
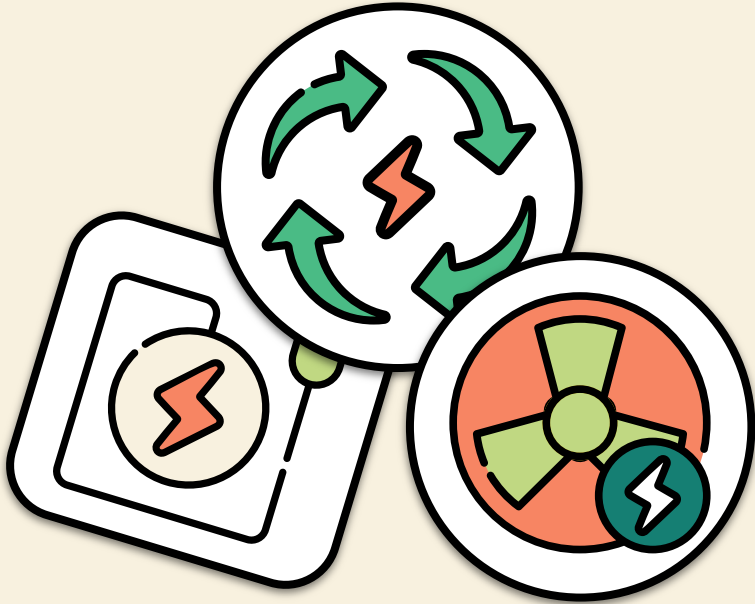
Integration with Enforcement Mechanism

- **Integrate regular reporting on APCD maintenance with enforcement mechanisms to ensure compliance with air quality regulations.**

- **Use maintenance performance data as part of enforcement actions, such as issuing fines or penalties for non-compliance with maintenance requirements.**

02

SURPRISE
INSPECTIONS

Random Selection Process

- **Conduct surprise inspections at large-scale industries selected randomly or based on risk assessment criteria, without prior notification to the facility.**
- **Rotate inspection teams and schedules to maintain unpredictability and prevent gaming of the system.**

Comprehensive Inspection Protocols

- **Develop standardized inspection protocols covering all aspects of APCD installation, operation, maintenance, and compliance with air quality regulations.**

- **Include detailed checklists, sampling procedures, and documentation requirements to ensure thoroughness and consistency in inspections.**

Verification of Maintenance Records

- **Verify the accuracy and completeness of maintenance records and reports provided by industries during surprise inspections.**

- **Cross-check maintenance activities documented in reports with on-site observations and interviews with facility personnel.**

Performance Testing & Monitoring

- **Conduct on-site performance testing and monitoring of APCDs to assess their effectiveness in reducing emissions and controlling air pollution.**

- **Verify compliance with emission standards and regulatory requirements through real-time measurements and analysis.**

# Follow up and Corrective Measures

- Follow up on findings from surprise inspections with corrective measures and remedial actions, including mandated repairs, upgrades, or additional monitoring requirements.

- Monitor compliance with enforcement directives and verify the implementation of corrective measures through follow-up inspections and audits.

03

FUGITIVE EMISSIONS CONTROL
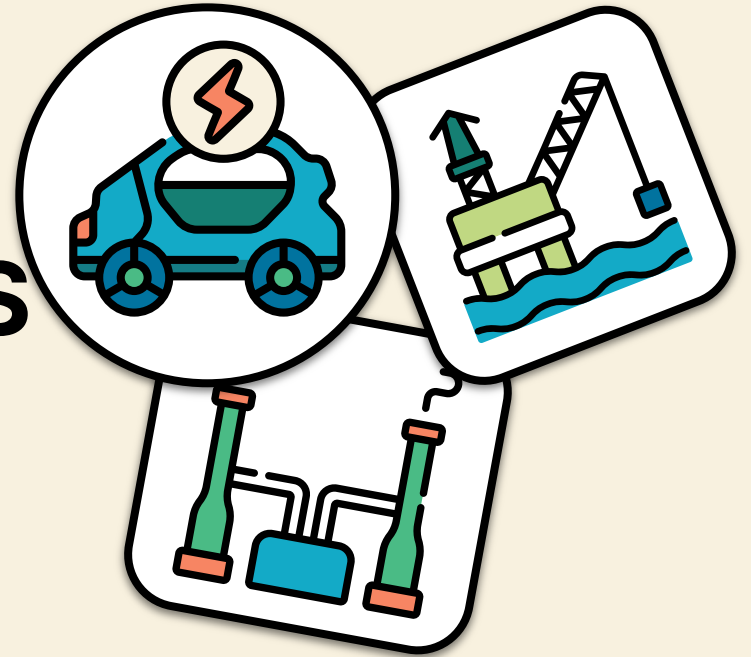
Understanding Fugitive Emissions

- **Definition of fugitive emissions and their sources within industrial operations.**

- **The environmental and health impacts of fugitive emissions, including air pollution and respiratory ailments.**

Understanding Fugitive Emissions

MAJOR INDUSTRIES WITH FUGITIVE EMISSIONS
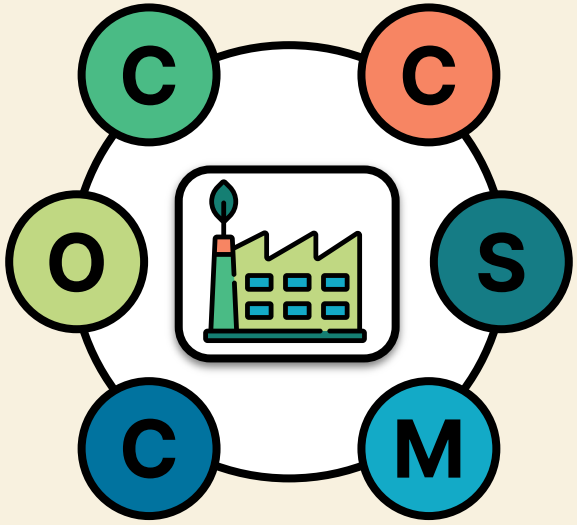
CHEMICAL / PETROCHEMICAL

CEMENT

OIL AND GAS

STEEL / METALLURCIGAL

CONSTRUCTION / DEMOLITION

MINING / QUARRYING

Regulatory Framework

- **Relevant national and state-level regulations governing fugitive emissions should be known.**

- **Key legislation, standards, and guidelines applicable to respective / specific industries / sectors should be taken into consideration.**

Best Practices for Fugitive Emissions Control

a. Emission Source Identification:

- Conduct regular assessments to identify sources of fugitive emissions within industrial facilities.

- Implement monitoring programs to quantify emissions from various sources.

Best Practices for Fugitive Emissions Control

b. Engineering Controls:

▪ **Utilize engineering solutions to minimize fugitive emissions, including:**

  o **Installation of enclosures and barriers**

  o **Implementing negative pressure systems**

  o **Implementing dust suppression techniques**

Best Practices for Fugitive Emissions Control

c. Maintenance and Housekeeping:

- Develop comprehensive maintenance schedules to ensure the proper functioning of equipment and containment systems.

- Establish protocols for regular cleaning and inspection of emission control equipment.

Best Practices for Fugitive Emissions Control

d. Capacity Building:

- **Provide training programs to employees on the importance of fugitive emission control and proper handling of equipment.**

- **Encourage a culture of environmental responsibility and compliance among workforce.**

Best Practices for Fugitive Emissions Control

e. Innovative Technologies:

▪ **Explore innovative technologies for fugitive emission control, such as:**

  o **Remote monitoring and control systems**

  o **Advanced leak detection sensors**

  o **Low-emission process technologies**

Continuous Improvement

- **Encourage industries to periodically review and update their fugitive emission control measures.**

- **Promote knowledge sharing and collaboration among industries, regulatory agencies, and environmental experts.**

GREEN COVER
AND
WIND BREAKING WALLS

Importance

- **Green cover and windbreaking walls serve as vital components of industrial landscaping.**

- **They help mitigate environmental impact by reducing air and noise pollution, preventing soil erosion, and enhancing aesthetic appeal.**

- **Windbreaking walls also provide protection against strong winds, thereby improving the microclimate within industrial premises**

Selection of Plant Species

- Choose native plant species that are well-adapted to the local climate and soil conditions.

- Opt for fast-growing and low-maintenance plants to establish a green cover quickly.

- Consider drought-resistant plants to ensure sustainability, especially in regions with water scarcity.

Green Cover

Particulate pollution

A 65 to 600 ft wide buffer may reduce particulate pollution by 40 to 75 percent although many factors will affect pollutant removal

Placement & Design of Windbreaking Walls

- **Strategically position windbreaking walls along the boundaries of industrial sites to minimize wind exposure.**

- **Design walls using sturdy materials such as concrete, brick, or metal to withstand strong winds and provide long-term durability.**

- **Incorporate architectural elements or landscaping features to enhance visual appeal.**

Windbreaking Walls

Green Cover & Windbreaking Wall

Irrigation and Water Management

- **Install efficient irrigation systems such as drip irrigation or sprinklers to provide adequate water to the green cover.**

- **Implement water conservation measures such as rainwater harvesting to reduce reliance on freshwater sources.**

Compliance with Envi. Regulations

- **Ensure compliance with environmental regulations and guidelines governing landscaping and green cover requirements for industries.**

- **Obtain necessary permits and approvals from relevant authorities before implementing green cover and windbreaking wall projects.**

Integration with Sustainable Practices

- **Integrate green cover and windbreaking walls into broader sustainability initiatives within industrial operations.**

- **Explore synergies with renewable energy projects, waste management practices, and energy efficiency measures to enhance overall environmental performance.**

DUST CONTROL
AND
WATER BASED SYSTEMS TO CONTROL FUGITIVE EMISSIONS

Assessment of Sources

- **Identify sources of fugitive dust emissions within industrial facilities, construction sites, and other relevant areas.**

- **Conduct a comprehensive assessment to determine the extent and impact of fugitive dust emissions on air quality and public health.**

Selection of Dust Control Systems

- **Evaluate various dust control technologies, including dust suppression systems, water-based systems, and chemical agents.**

- **Choose appropriate systems based on the specific requirements of the site, type of dust emissions, and effectiveness in controlling fugitive dust.**

Design & Engineering

- **Develop detailed engineering plans for the installation of dust control systems, considering factors such as site layout, equipment placement, and water supply infrastructure.**

- **Ensure compatibility with existing operations and infrastructure to minimize disruptions during installation.**

Water Based Control Systems

- **Implement water-based dust control systems that utilize water spray or mist to suppress dust emissions effectively.**
- **Install water tanks, pumps, and distribution networks to supply water to dust control equipment and ensure continuous operation.**

Water Based Control Systems

Integration with Automation & Monitoring

- **Integrate dust control systems with automation and monitoring technologies to optimize performance and minimize water usage.**

- **Install sensors, controllers, and remote monitoring devices to detect dust levels, adjust spray patterns, and track system performance in real-time.**

04

HAZ. WASTE MANAGEMENT

SEGREGATION
AND
PROPER STORAGE OF
WASTE GENERATED BY
INDUSTRIAL PROCESS

Understanding Industrial Wastes

- **Categorize industrial waste based on its type (solid, liquid, hazardous, non-hazardous).**
- **Identify the composition and characteristics of each type of waste generated.**

Segregation Process

- **Establish clear guidelines for segregation at the source.**

- **Provide separate bins or containers for different types of waste (e.g., recyclable, non-recyclable, hazardous).**

- **Train employees on proper segregation practices and the importance of separating waste streams.**

Hazardous Waste Management

- **Identify hazardous waste streams and ensure their separate collection and handling.**

- **Implement strict protocols for the segregation and labeling of hazardous waste containers.**

- **Ensure compliance with hazardous waste disposal regulations, including proper treatment and disposal methods.**

Storage Facilities

- **Designate specific areas or storage facilities for different types of industrial waste.**

- **Ensure that storage areas are secure, well-ventilated, and equipped with appropriate containment measures.**

- **Implement measures to prevent spills, leaks, or contamination of surrounding areas.**

Storage Facilities

Labelling and Signage

- **Clearly label waste containers with the type of waste and any associated hazards.**

- **Use standardized color-coding and signage to indicate the nature of the waste and handling instructions.**

- **Display safety signs and instructions for emergency response procedures.**

Labelling and Signage

INCENTIVISE INDUSTRIES FOR RE-UTILISATION OF WASTE

Government Incentives Programs

- **Introduce financial incentives such as tax breaks, subsidies, and grants for industries that implement waste reutilization practices within their premises.**

- **Provide funding support for research and development initiatives focused on waste reutilization technologies and processes.**

Recognition and Certification

- **Establish recognition schemes and certification programs to acknowledge industries that demonstrate excellence in waste reutilization.**

- **Offer prestigious awards and accolades to incentivize participation and promote industry leadership in sustainable waste management.**

Sector Specific Initiatives

- **Tailor incentive programs to specific industrial sectors based on their waste generation profiles, resource requirements, and technological capabilities.**

- **Foster collaboration among industry stakeholders, research institutions, and technology providers to address sector-specific challenges and opportunities in waste reutilization.**
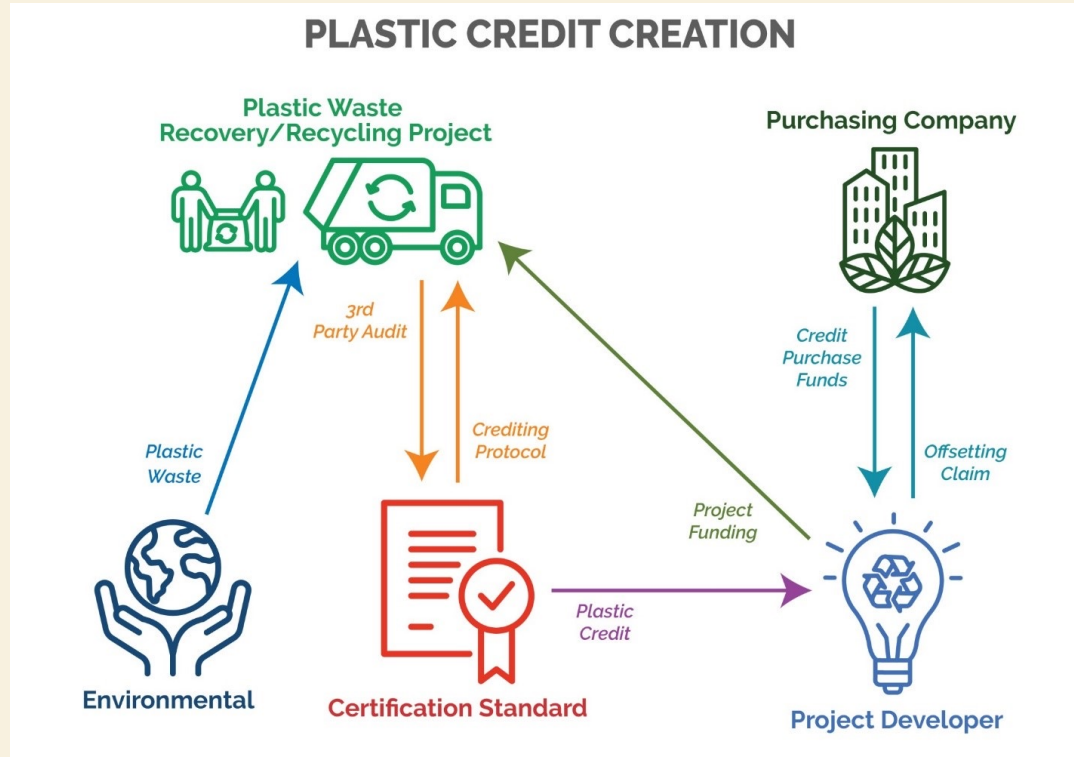
Performance Based Incentives

- **Introduce performance-based incentive mechanisms that reward industries based on their waste reutilization rates, resource efficiency improvements, and environmental performance indicators.**

- **Establish benchmarks and targets for waste reutilization and track progress over time to ensure accountability and transparency in incentive disbursement.**
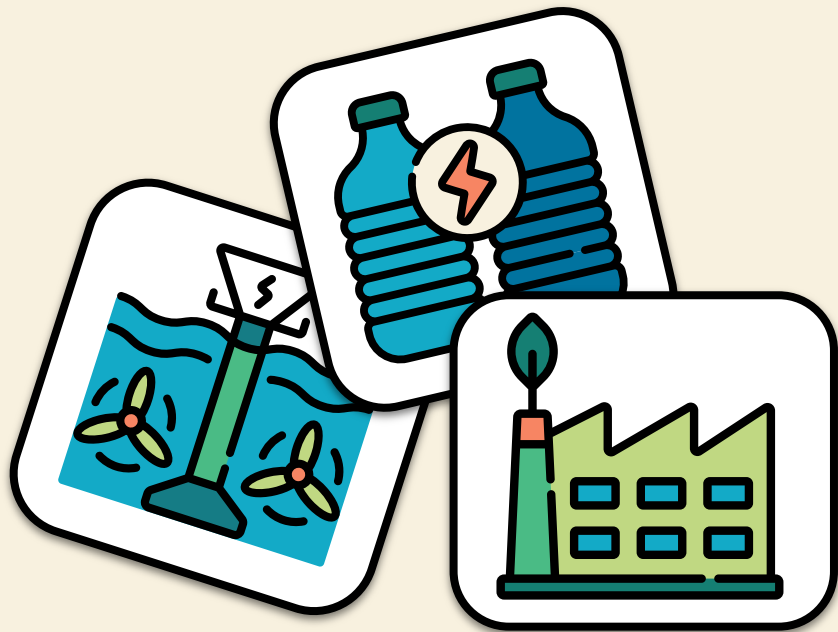
Market-Based Incentives and Trading Schemes

- **Implement market-based incentives such as tradable permits, recycle credits, and green procurement policies to incentivize waste reutilization and resource recovery.**
- **Create markets for recycled materials and secondary raw materials to stimulate demand and encourage investment in waste reutilization infrastructure.**

Market-Based Incentives and Trading Schemes

PLASTIC CREDIT CREATION

Plastic Waste Recovery/Recycling Project

Purchasing Company

3rd Party Audit

Crediting Protocol

Plastic Waste

Credit Purchase Funds

Offsetting Claim

Project Funding

Environmental

Plastic Credit

Certification Standard

Project Developer

THANKS

Do you have any questions?

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