



هيئة البيئة - أبوظبي  
Environment Agency - ABU DHABI



# AN ENVIRONMENTAL CAMPAIGN FOR THE HOT ASPHALT MANUFACTURING SECTOR

QUESTION AND ANSWER

**ELTEZAM**

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# INTRODUCTION

In 2013, the Environment Agency – Abu Dhabi launched the Eltezam campaign in order to improve the environmental performance of Abu Dhabi's industrial sectors. Meaning 'compliance' in Arabic, this campaign has so far enhanced the awareness of 3 sectors (Ready-Mix, Fiberglass and Metal Coating Manufacturing) in environmental laws and regulations. This has been done by conducting workshops and compliance inspections to ensure their adherence to environmental regulations. Following success with the first three sectors, EAD is now expanding this campaign to cover the asphalt manufacturing industry.

Asphalt is a high-viscosity, black oil substance extracted through the process of crude oil distillation under pressure and high temperatures up to 300°C. It has several different types based on liquidity and concentration, as well as the temperature of melting and freezing. The asphalt industry is one of the most significant, in both the construction and transportation sectors. Moreover, asphalt manufacturing is significantly in demand as it is the main material used in paving roads and airports. The manufacturing process includes various steps such as storage, drying and mixing of raw materials, which could result in negative impacts on the environment.

Due to the significant role of the industrial sector in the economic growth of the Emirate of Abu Dhabi, asphalt manufacturing facilities must comply with all standards applied in the Emirate and must consider changes in environmental conditions, international best practices and environmental requirements.

The information provided in this brochure aims to help you comply with the requirements and provide you with the resources to obtain more information, if needed.



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# 1

## WHAT ARE THE KEY ENVIRONMENTAL LAWS IN THE UAE AND ABU DHABI?

There are three key environmental laws that may affect your facility:

### **Federal Law No. 24 of 1999 for the Protection and Development of the Environment, amended by Federal Law No. 20 of 2006 and the implementing environmental regulations thereof:**

This law aims at protecting the environment of the UAE through pollution control, environmental awareness, regular management and protection, biodiversity conservation, and compliance with regional and international agreements.

Subsequent Executive Orders and Appendices of the Law require environmental studies for proposed projects, regulate management of hazardous materials and chemicals, and protect the air and marine environment.

### **Local Law No. 16 of 2005 pertaining to the Reorganisation of the Environment Agency – Abu Dhabi:**

Under this law, the Environment Agency – Abu Dhabi (EAD) was established as an independent judicial entity with a mission to protect and conserve the environment and wildlife of Abu Dhabi Emirate. This law requires entities to obtain an environmental permit from EAD and prohibits conducting activities that could negatively affect public health and/or the environment. This law also empowers EAD to stop hazardous activities conducted by the industrial facilities.

## Local Law No. 21 of 2005 for Waste Management in Abu Dhabi Emirate

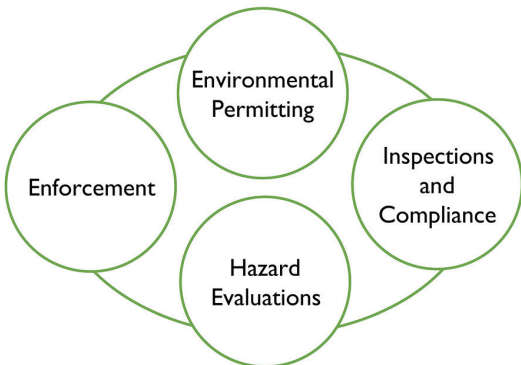
This law outlines EAD's responsibilities as the competent authority for waste management practices in Abu Dhabi Emirate and requirements for entities that generate, treat, and dispose of waste. To further clarify responsibilities under this law, Tadweer (The Centre of Waste Management - Abu Dhabi) was established in 2008 to coordinate the policy, strategy, and contractual systems of waste management across Abu Dhabi Emirate.

### More information

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Information about these laws and other international, regional, federal, and local regulations and conventions is available on EAD's website at <https://www.ead.ae>.

These laws established a comprehensive system by which EAD monitors and protects the public health and environment. EAD controls this system and ensures the application of it.



## 2

## WHO IMPLEMENTS THESE LAWS?



### Environment Agency – Abu Dhabi (EAD)

EAD is the governmental organisation responsible for protecting the environment in Abu Dhabi Emirate. EAD issues environmental permits and inspects industrial facilities for compliance with the applicable environmental requirements and laws. EAD also evaluates and registers Environmental Consultancy Offices (ECOs) that perform environmental work in Abu Dhabi Emirate and prepare environmental studies for EAD.



### Abu Dhabi Occupational Safety and Health Center (OSHAD)

OSHAD was established in February 2010 to ensure the implementation of a comprehensive and integrated management system for occupational safety and health in workplaces. OSHAD oversees all occupational safety and health issues within the Emirate of Abu Dhabi.



## Industrial Development Bureau (IDB)

IDB is responsible for providing an ideal environment for the development of the industrial sector to enhance the economic diversification of the Emirate.

IDB provides industrial licensing, customs exemptions, and the regulatory services for the industrial sector in Abu Dhabi Emirate. It represents the main archival reference for industry development in the Emirate as it cooperates with the key partners and oversees the implementation of policies, plans and programs related to the industrial sector.

IDB provides the regulatory and legal frameworks for the development and establishment of industrial projects, and issuance of licenses for all industrial projects and facilities in the Emirate.



## Tadweer

### (Center of Waste Management – Abu Dhabi)

Tadweer is responsible for the management of all wastes excluding wastewater and radioactive waste in the Emirate through the development of a comprehensive system for collecting, transporting, processing and disposing such wastes, and enhancing the capacities of the private sector to handle wastes, and providing and qualifying the providers of environmental services in the fields of collection, transportation and disposal of wastes.

Tadweer sets integrated systems and programs for waste management and pest control according to the highest standards adopted globally, through optimal investment of assets, specialized human resources and world-class technological solutions to enhance the environmental sustainability and community awareness leading to convert waste into valuable economic resources for Abu Dhabi Emirate.

# 3

## WHAT AM I REQUIRED TO DO UNDER THE LAWS?

- Obtain or renew an environmental permit.
- Prepare and apply periodic control programmes for monitoring any non-compliance and risk issues associated with industrial operations.
- Comply with the laws and the permit conditions applicable to your facility.



## 4 HOW DO I OBTAIN OR RENEW AN ENVIRONMENTAL PERMIT?

### How to apply

**Step 1:** Apply for an industrial permit through IDB. This step applies to all industrial facilities EXCLUDING those in a free zone. If your facility is located in a free zone, you must apply through KIZAD.

**Step 2:** Apply for an environmental permit through EAD via the eServices portal at <http://eservices.ead.ae>. You must obtain your environmental permit BEFORE construction commences at a new facility. If you are an existing facility, and just in need of a technical or administrative modification, you should also use the eServices.

Any application received by EAD without the required documentation or with inaccuracies will be immediately returned to the applicant for resubmission.



If this is the first time you use eServices, you will need to:

1. Set up a User Name and Password.
2. Answer all questions about the facility, production processes and production lines.
3. Provide supporting documentation before submitting the application.

**Step 3:** EAD will receive and review the application and take a decision. You may be required to conduct an environmental study before the permit is issued to you. Environmental studies identify the potential negative impacts of the facility to the environment and the ways these impacts can be prevented or minimized.

A facility permit must be renewed annually. However, permits will not be renewed if major environmental violations are found by EAD's inspectors.

### More information

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The environmental permitting process is also described in the Technical Guideline for Submission of Environmental Applications and Reports, available on EAD's website at [www.ead.ae](http://www.ead.ae). Alternatively, you can contact EAD's Customer Service at 02-4454777.

# 5

## WHAT TYPE OF ENVIRONMENT, HEALTH AND SAFETY PLAN SHOULD I HAVE AT MY FACILITY?

The Abu Dhabi Government is committed to maintaining the safety and health of personnel, improving the performance of the premises and achieving the highest standards in this field in order to contribute to the reduction and prevention of accidents and injuries related to occupational safety and health.

Upon the directions of the government, occupational safety and health standards and requirements in the Emirate of Abu Dhabi were developed and applied at the end of 2006 to address workplace risks and manage all aspects of occupational safety and health.

The Abu Dhabi Environment, Health and Safety System (EHSMS) is an integrated administrative mechanism involving all aspects related to occupational safety and health. Integration of these elements leads to the achievement of work objectives efficiently through the management of the negatives effects of activities and the reduction of workplaces risks. This system is based on international standards related to occupational safety and health and has unique characteristics, namely:

- Improve performance on the management of occupational safety and health aspects
- Enhance communication and consultation between the personnel and employers

- Establish effective partnerships between the public and private sectors
- Build and raise capacities in occupational safety and health aspects
- Consider the cultural change between the personnel and the different groups of society through the provision of safe and healthy working environments

The Abu Dhabi Occupational Safety and Health Center (OSHAD) is the regulatory authority responsible for the implementation of Abu Dhabi Environment, Health and Safety System (EHSMS) in the Emirate.

## More information

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For more information about EHSMS, please visit:

<https://www.oshad.ae>

For more information about the Environmental Management Plan, please see the Technical Guidance Document for Operation Environmental Management Plan available at:

<https://www.ead.ae>

# 6

## WHAT ARE THE PERMIT CONDITIONS AND STANDARDS WITH WHICH I MUST COMPLY?

Each environmental permit issued to a facility will include a set of general permit conditions and a set of detailed permit conditions, specific to the asphalt manufacturing sector.

Your facility must comply with ALL permit conditions at ALL times to minimize impacts to the environment and public health. Your environmental permit will also include the environmental standards with which your facility will need to comply.

Additionally, there are many international best practices available for asphalt manufacturing facilities to improve process efficiency and further reduce your facility's environmental impacts.

An EAD inspector can work with you during the inspection and compliance process to identify more areas for improvement at your facility.





*Storing the raw material in a closed shaded area to prevent the volatilization of dust and particulate matter.*

# 7

## HOW WILL MY FACILITY BE INSPECTED?

EAD will inspect your facility prior to commissioning, during operations, and upon decommissioning a facility. Inspections are our way of checking a facility's compliance with the laws and environmental permit conditions throughout the life cycle of the facility.

Scheduled inspections are conducted by EAD throughout the year. The designated environment, health, and safety representative at the facility is usually the EAD's point of contact during the inspection and compliance process.

### Information collection and report

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EAD's environmental inspectors use a specialised computer software tool during the inspection to determine your facility compliance. This tool collects information about your facility's process operations and environmental impacts of them, monitors environmental violations and determines your facility compliance with the environmental conditions and laws applicable in the Emirate.

EAD inspectors will review the records and licenses, systems of waste management in your facility, and will assess the sources of water, air and soil pollution, and the compliance with the installation of devices and equipment for the reduction of pollution. The inspector will also review your facility's chemical inventory records, Material Safety Data Sheets (MSDSs), materials storage and handling practices (focusing on hazardous materials), employee training records, and previous inspection and audit records.

At the end of the inspection, an inspection report will be e-mailed to your facility's representative. This report summarizes the areas in which violations were found, if any, and recommends best management practices to address these violations.



*During environmental inspections, EAD inspectors identify the areas that are environmentally non-compliant and corrective actions are discussed with your facility representatives*

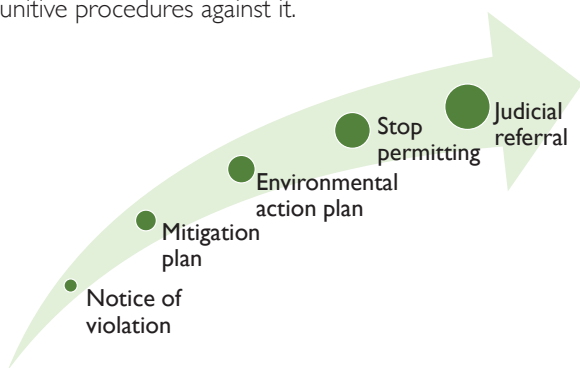
## 8

## WHAT HAPPENS IF MY FACILITY IS NOT IN COMPLIANCE WITH THE PERMIT CONDITIONS AND/OR ENVIRONMENTAL LAWS?

The inspection record provides a summary of the violations committed and the compliance level of the facility. Inspectors may set another date for inspection to ensure correcting the issues listed in the inspection record on time.

Based on the severity of violations, EAD may request the entity committed the violation to prepare a corrective plan or cooperate with an environmental consulting office to prepare an environmental action plan indicating the steps to be taken to correct the violations within an agreed timeline.

If the violations recorded keep continue to be observed, EAD may decide not to renew the facility's environmental license until all the violations are handled. EAD may also refer the facility to the legal department to take the legal and punitive procedures against it.



*Compliance escalation process to address violations.*



*During environmental inspections, EAD inspectors identify the areas that are environmentally non-compliant and corrective actions are discussed with the facility representatives.*

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## WHAT ARE THE MOST IMPORTANT ENVIRONMENTAL AND HEALTH IMPACTS THAT MAY RESULT FROM ASPHALT MANUFACTURING?



- Air pollution
- Soil Contamination
- Generation of solid and liquid waste

## Air pollution

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Operational activities of asphalt manufacturing facilities can result in the release of fugitive dust emissions and in the suspension of very fine particulate matter into the air, which may contain hazardous contaminants that may pose a hazard to the environment and to the health and safety of workers.

### **SUSPENDED PARTICULATE MATTER (SPM):**

SPMs are microscopic solid or liquid matter that are suspended in the atmosphere. The complex mixture of these suspended solid or liquid particles in the atmosphere is termed as “Aerosols”, and can be generated from natural and anthropogenic sources. The release of these suspended particles can have an impact on the environment.

SPMs can enter the respiratory tract and may pose danger to human health. These particles are classified into coarse particles with diameter of 2.5-10 micrometer and soft particles with diameter less than 2.5 micrometer. SPMs can be classified based on their size to the following:

**Settled Particulate Matter:** They are particulate matter that settle on the ground by the force of gravity and called the settled dust, and have a diameter size greater than 10 micrometers. This particulate matter can affect the industrial facilities, buildings and properties. Their release can cause mild irritation to the eye and respiratory tract because the nasal passages can capture a large part of them; especially particles that are more than 100 micrometers in diameter.

**Total Suspended Particles “TSP”:** These particles are between 0.1 and 10 micrometers in diameter; their settlement rate on the ground is relatively slow, and they remain suspended in the atmosphere for a long period of time. The suspended particles are considered one of the most dangerous air



*Install air control devices that control gas emissions resulting from the operation activities.*

pollutants, as they can reach the respiratory system and are stuck in the lungs. Some of these particles are large or dark-colored, seen with the naked eye like smoke, others are too small to be detected except by electronic microscopy.

Suspended particles of no more than 2.5 micrometers are typically emitted from industrial operations such as fuel combustion in factories, power plants, and wood burning. Particles greater than 2.5 micrometers are usually produced from operations related to vehicle traffic on unpaved roads and quarrying activities. The accumulation of these suspended particles in the air can cause respiratory problems, and result



in serious health effects such as respiratory irritation and asthma. Fine suspended particles can cause several problems such as heart and lung diseases, low lung function, and sometimes even more serious ones. The emission of these suspended particles can also cause non-health related problems, such as reduction in visibility and its related problems, and damaging paints and building materials.

**Ultrafine Particles:** These particles are very small and are less than 0.1 micrometers in diameter. They are hard to settle on the ground, as they exhibit random movement while suspended in the air. These particles can come together and increase in size to more than 1 micrometer.

**Carbon Monoxide:** A colorless, flavorless, odorless gas that results from incomplete combustion of fuel. It is considered a toxic gas that can cause health problems. Signs and symptoms of poisoning are headache, nausea, dizziness, weakness or unexpected collapse and fainting. • Use better spray gun application techniques to reduce paint use and emissions.

**Carbon Dioxide:** A gas that is produced from combustion of fuel, it is considered to be a greenhouse gas and it accounts for about 60% of the gases that affect and cause global warming. Exposure to high concentration of this gas can result in health problems such as visual impairment and respiratory failure which may lead to suffocation.

## VOLATILE ORGANIC COMPOUNDS (VOC):

A large group of gases that are emitted from certain solids or liquids such as acetone, toluene, xylene and several others. They are generally colorless, odorless, and evaporate easily at room temperature. VOCs have the ability to interact with other contaminants (such as nitrogen oxides) in the lower atmosphere to form ground-level ozone. Unlike ozone in the stratosphere, ground-level ozone can pose a health hazard and is one of the main causes for asthma.

Some VOCs can directly damage human health and are considered carcinogenic, others contribute to global warming such as Methane, while others destroy the stratospheric ozone that is required to protect the Earth surface of the ultraviolet rays such as Methyl Bromide.

## HAZARDOUS AIR POLLUTANTS (HAPS):

Also known as toxic air pollutants or air toxics, are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects and birth defects, or adverse environmental effects. The US Environmental Protection Agency (EPA) identified 187 hazardous air pollutants to the environment.

Examples of hazardous air pollutants:

- Gasoline found in automotive fuel.
  - Methylene chloride, which is used as a solvent and paint remover by a number of industries.
  - Dioxin, asbestos, toluene and metals such as cadmium, mercury, chromium and lead compounds.
  - Methyl ethyl ketone, methyl isobutyl ketone.
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## Soil contamination

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Asphalt manufacturing industry generally does not use water in production processes, nor does it produce any liquid waste that will affect soil properties inside facilities. Clean water is used to spray storage areas of raw materials, paved and unpaved roads, and this does not have any negative impact on the soil. Water maintains on the areas where it was sprayed or it can evaporate and will not be discharged outside the plant.

There is the possibility for liquid bitumen and diesel to leak from storage tanks and connection pipes, in the absence of a secondary containment and spill prevention kits. The presence of workshops for the maintenance of vehicles and equipment within the facility may increase the likelihood of soil contamination with oils and other contaminants.

## Generation of solid and liquid waste

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The production of solid and liquid waste from the asphalt manufacturing is relatively small compared to other industries. Waste types include bitumen residues, and particulate matter that is collected using an Air Pollution Control Devices (APCD). The collected particulate matter can be reused again in the production process, thus reducing the need for disposal to into landfills. In addition, some wastes can be generated from vehicle washing, and leaks associated with filling vehicles with fuel.

## WHAT ARE THE INTERNATIONAL BEST PRACTICES FOR CONTROLLING ENVIRONMENTAL ASPECTS AT MY FACILITY?

The application of best technical and administrative practices will minimize negative impacts on the environment, public health and workers' safety. As well, technical and administrative best practices include technical modifications, replacement of equipment or raw materials, installation of the latest equipment and devices that reduce contaminants.

### Air pollution

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Several measures can be used to control and reduce air pollution such as:

- Store raw materials in closed vents to prevent the volatilization of dust and particulate matter by weather conditions or in handling and transport processes using the techniques of prevent dust volatilization such as water spraying or chemical inhibitors.
- Pave floors with permanent cleaning by periodically spraying water; using chemical inhibitors for dust or using a dust suction system.
- Cover the belt conveying the raw materials (gravel, sand) to prevent dust from flying.
- Replace the diesel fuel with industrial gas or electric drying furnaces as they are environmentally cleaner.
- Use Low SO<sub>x</sub> fuel.
- Use of low NO<sub>x</sub> burners.
- Make regular maintenance and calibration of gravel drying and bitumen heating ovens.

- Install filters that control gas emissions resulting from drying raw materials and heating bitumen such as textile filters and wet or dry scrubber.
- Commit to the maximum speed of vehicles within the facility during loading, unloading and transporting raw materials.
- Wear and use personal protection equipment by workers such as masks, safety boots, and ear plugs.

## Soil contamination

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Several measures can be used to reduce the water used in preventing soil pollution such as:

- Pave roads and storage areas in the facility to reduce soil contamination in case of spillage.
- Use treated wastewater and/or seawater to reduce fresh water consumption after having the license from EAD.
- The floors of maintenance workshops should be free from cracks and non-permeable for liquids.
- The oil storage area should be in compliance with EAD requirements.
- Train workers on spillage emergency procedures.

## Production of solid and liquid waste

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Small quantities of waste are produced by the various operations used in asphalt manufacturing. Facilities should effectively manage such waste by storing it in a dedicated storage area, labelling it based on the degree of danger and physical and chemical properties and then disposing it by contracting with an environmental service provider licensed Tadweer.



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## ABOUT EAD

Established in 1996, the Environment Agency – Abu Dhabi (EAD) is committed to protecting and enhancing air quality, groundwater and the biodiversity of our desert and marine ecosystems. By partnering with other government entities, the private sector, NGOs and global environmental agencies, we embrace international best practice, innovation and hard work to institute effective policy measures. We seek to raise environmental awareness, facilitate sustainable development and ensure environmental sustainability remains one of the top priorities of our national agenda.



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