

Summary report

Emissions resulting from oil refineries

The southern region of Kuwait is considered to be the most vulnerable area to air pollution due to the industrial area where many of the large industries are established such as Kuwait Petrochemical Industries Company, EQUATE Petrochemical Company in addition to Kuwait National Petroleum Company refineries, oil fields and plants of Kuwait Oil Company, Power stations of the Ministry of Electricity and Water, the industrial zone at Mina Abdullah and the Private Sector plants.

The main goals of the Public Authority for Environment that air pollutants emitted from different sources are within the limits in a way they do not affect the air quality standards in residential or industrial areas, and that the plants emitted pollutants should not exceed the allowed limits. For that purpose a specialized department was assigned to follow-up, monitor and assess air pollution in a number of residential areas in the State of Kuwait, "Air Pollution Monitoring Department" within the organizational structure of the Public Authority for Environment, its mission is to monitor and set the concentration levels of major air pollutants, and compare them to the set standards by using measurement tools in fixed stations or mobile laboratories, which have been installed and operated in a number of residential areas since 1984.

In the framework of the State Audit Bureau (SAB) interest in environmental auditing, SAB implemented an environmental audit program linked to gas emissions resulting from oil refineries in order to assess the efficiency of the department in charged of monitoring air pollution in the Public Authority for Environment and its role in performing the Authority's mission in monitoring causes of air pollution, and verifying the commitment to comply to air quality standards and requirements under the decision no. 210\2001 issued by the Public Authority for Environment regarding the executive regulations of the Authority's Law of Establishment, and assessing the health and environmental impacts of gas emissions from oil refineries, as well as evaluating the requirements and procedures taken to reduce emissions.

SAB concluded the following findings:

1. Air Pollution Monitoring Department suffers from deficiency in staff members especially the technical staff, and that the department is in need to train plant operators on the maintenance of equipment and vehicles to better service the departments.
2. An analysis of Air Pollution Monitoring Department of the Public Authority for Environment on 2009 measurements and comparing the results in Annex No. 1 \ 17.2 \ 17 of decision no. 210 of 2001 on air quality showed the following:

1\2 (n-CH₄) gas exceeded the allowed limits (0.24 P.P.M) most of the year.

2\2 Sulfur Dioxide (SO₂) exceeded the allowed daily limits on September 17 2009 by (70.8 P.P.b).

3\2 Nitrogen Dioxide (NO₂) exceeded the annual allowed limits (30 P.P.b) as it achieved an annual average of (43.5 P.P.b), it also exceeded the daily limits reaching (50 P.P.b) in November.

4\2 Nitrogen Dioxide reported noticeable increase in comparison with previous years averages.

5\2 Wind direction indicate that the highest concentration of these pollutants move mostly toward the south, and oil facilities and other establishments in the southern region are responsible for the spread of pollutants in the air around Fahaheel residential area.

3. Kuwait National Petroleum Company assesses the emitted gases concentration taken directly from the refinery, and report it to the Public Authority for Environment monthly encompassing information on emitted materials concentration to the air.
4. Kuwait National Petroleum Company reports, and the refinery's field inspection for Al.Ahmadi Refinery showed:

1\4 No presence of the Public Authority for Environment in the oil refineries areas.

2\4 Kuwait National Petroleum Company takes the inspection samples directly from outside the refinery (Alahmadi Refinery), while the Public Authority for Environment takes it from fixed and certain locations (Al-fahaheel Station).

3\4 Entities refer to different standards than the ones used by the Public Authority for Environment which are Annex (1 \ 17) (2 \ 17) , decision No. 210 of 2001 on air quality, while Kuwait

National Petroleum Company follow Annex No. (20), decision 210 of 2001, environmental standards allowed for air emissions from fixed sources, page 340:

5. By reviewing Kuwait National Petroleum Company's air pollution measurement of Al-Ahmadi refinery for the year 2009, and comparing it with air emissions from fixed sources, Annex No. (20), decision no. 210 of 2001, the following was found:

1/5 The measurement results of sulfur dioxide (SO₂) exceeded the standard rates in fluidized catalytic cracker factor (kg 9.8).

2/5 The measurement results of sulfur dioxide (SO₂) exceeded the standard rates (ppmv 250).

3/5 The measurement results of sulfur dioxide (SO₂) exceeded the standard rates of Claus Sulfur Recovery Unit due to the compulsory stopping of one of the two units and putting extra load on the other unit. The company is in the process of adding a new unit to deal with this gas.

4/5 The measurement results of Hydrogen sulfide in fuel gas (H₂S) exceeded the standard rates (mg 230).

6. The different sampling locations , the Public Authority for Environment and Kuwait National Petroleum Company, resulted in varying measurements and thus , lack of accurate pollution monitoring.

In light of the results, SAB recommends the following:

Recommendations related to high risk:

1. Presence of technical staff of the Public Authority for Environment is required at the oil industry areas and other industrial areas to follow up the environmental situation and conduct daily tests to monitor and measure air pollution, as well as the possibility of environmental monitoring of pollutants resulting from the refineries and gas emissions.
2. Strengthen cooperation between the Public Authority for Environment, the Kuwait Institute for Scientific Research and global environmental institutions to implement studies to measure and assess the pollution rates from oil refineries to ensure compliance with laws and regulations protecting the environment and ensure that the areas adjacent to oil establishments are not-affected.
3. Monitor air quality in oil refineries areas and define sources that cause air pollutants emissions, and find solutions to limit the problem in order to ensure a clean and healthy work environment.

Recommendations related to medium risk:

4. Treat deficiency of staff especially the technical staff expert in air pollution and stations management, to face the expected expansion in fixed stations and mobile labs.
5. Train stations operators on maintenance work to increase equipment efficiency, in addition to the maintenance companies' work.
6. Provide enough vehicles to serve the divisions in order to perform duties timely and efficiently, as well as provide communication means for technical staff for emergencies.