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**Tunisia's coast dying slowly: industrial pollutants are blocking valleys and environment is heating up**

Sixty-year-old Khalid al-Hami, a sad, grueling figure, straddles a rock off the sea between the suburbs of Rades and Ezzahra from the governorate of Ben Arous, near Tunis.

He took a deep breath and then sighed with regret. The sea was no longer the one he had known decades ago after the government banned swimming in this area in 2017 as a result of pollution.

The southern suburb was dubbed the Pearl of the Gulf; the destination of holidaymakers from all regions, but since the early 1980s it has turned into a quagmire-like beach before the Ministry of Health classified some of its 19 beaches on the Tunisian coastline as polluted and prevented swimming there.

Khaled recalls the early 1980s when wave breakers were set up to repel the sea, but the way they were placed randomly disrupted its natural movement to a large extent.

The situation has exacerbated with the influx of polluted water and industrial waste from surrounding facilities through wadis tumbling towards the besieged shoreline.

**Pollution many times as high as global rate**

The investigation was carried out along the watercourses of some wadis which are Wadi Melian, Ben Arous, south of the capital Tunis, and the Bay of Rawad in the governorate of Ariana, north of the capital.

They end in the Mediterranean Sea and were classified by the official authorities as one of the largest polluted wadis that absorb industrial waste and household wastes.

In March 2017, six laboratory analyses were carried out by a private specialized laboratory at a sample of water taken from several locations at different intervals from Wadi Mellian and the Bay of Rawad.

The samples are more than ten times the normal rates, with chemical, industrial, metal and organic pollutants, including nitrogen, phosphorus, nitrate and copper.

Pollution rates in these samples are higher than the permissible international standards, according to Morshed Garbouj, the president of the association.

"Industrial enterprises deliberately dump their contaminated waste in these sewers for disposal" in clear breach of Article 8 of Law No. 91 of 1988, which requires companies that produce pollutants to create self-purification plants to treat their waste or transfer it to purification plants to be treated before it is poured into the drainage networks.

In 2107, analyses conducted by the Department of Health Conservation and Protection of the Environment on wastewater samples showed that the volume of excesses exceeded the maximum limits specified in the Tunisian standard 106002.

The percentage of non-compliance in relation to the presence of outstanding substances is 50 percent compared to normal rates.

High percentages of concentration of ammonia and phosphates are 100 percent higher than allowable levels.

Mohammed Al-Rabhi, Director General of the Department of Hygiene and Protection of the Environment attributed the deterioration of the water quality to the discharge of wastewater in the wadis or in the sea whether treated or not, industrial or non-industrial.

He considered that this poses a threat to public health and biological life and increases the susceptibility of these beaches to be places where swimming is prohibited.

Indeed, 19 beaches in the southern suburbs were banned by the Hygiene Department of the Ministry of Health in late May 2017.

This was done after a cleanliness campaign it conducted to measure the quality and cleanliness of beaches that covered 542 marine points.

At the end of the campaign, it classified about one quarter of Tunisian beach waters "below the good level", and therefore not suitable for swimming.

**Water quality**

These analyses also showed the high rates of organic pollutants when monitoring the activities of companies specializing in food and agricultural industries, such as tomato processing companies, milk and dairy product companies and those specializing in sea food canning and processing.

They reported the presence of heavy metal deposits such as lead, iron, zinc and cadmium emanating from industrial companies operating in garments, leather and shoes.

"The risk lies in the presence of non-biodegradable solid pollutants, such as chromium and some chromatography, in samples taken for analysis among chemical, electrical and metallurgical waste," said Ghazi Karou, director of the Department of Monitoring Polluting Activities at the National Oceanic Protection Agency.

**Imminent environmental Risk:**

The pollutants of industrial units and their effects on the environment and health are related to the quality of their activities and the wastes produced by the composition of the main constituents of these industries, Ghazi Karou said.

In addition to the rash that may affect vacationers in contaminated beaches, the increase in the proportion of suspended substances that reached in these samples between 3 to 40 times compared to normal levels result in the disruption of the process of self-liquidation in nature.

Moreover, it makes these materials not biodegradable in their natural format, according to a reading of the impact of the increase presence of suspended substances in these waters by environment expert Noureddine Ben Aissa.

The accumulation of heavy metals, which source can only be industrial activity causes the poisoning of water in some cases and damage to human and animal health, according to the same source.

**Uncountable offenses**

Food industry enterprises caused 94 violations, 11 were committed by companies specializing in the garments, leather and footwear industries and 33 were made by companies involved in the manufacture of building materials, ceramics and crystal.

Nineteen violations were committed by specialized institutions in the chemical industry and 11 were reported after proving irregularities in the mechanical, metallurgical and electrical industries. 70 other violations were distributed to various activities and industries.

The Minister of Local Development and Environment Riadh Mouakher told TAP the ministry works with 11 polluting industrial enterprises out of 622 institutions based in Ben Arous to oblige them to set up special treatment plants; only five of them have done so.

COE of the National Sanitation Utility (ONAS) Habib Omran told TAP industrial enterprises polluting the Wadi Melian area are operating in the manufacture and polishing of marble, foodstuffs and industrial oils, which randomly dump their waste into the valley.

Only 5 of them have set up preliminary filtering stations and the limited capacity of the sanitation utility makes it incapable of covering the large number of industrial units and monitoring them periodically.

The main problem is that the water produced by industrial units often exceeds the permissible limit of pollution, which biological purification plants cannot treat as required.

**Environmental disaster between recognition and inability**

With the persistence of the environmental situation in the region, Khalid and other people from the polluted coastal areas and those interested in the environment rely on the project "MEDCOT" project.

The latter, a Tunisian-Italian project, aims to carry out the process of sedimentation and raising seaweed and re-forming the sand.

It benefited the Municipality of Hammam-Lif and the Municipality of Castelvetrano-Selinunte.

It is implemented by the University of Sciences in Bizerte and the "Trapani" university complex in Italy, with the help of specialized associations and structures such as the Agency of Coastal Protection and Planning to restore the lost vitality in some Tunisian coasts.

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