

## PRE-REPORT of DİLOVASI AREA, KOCAELİ

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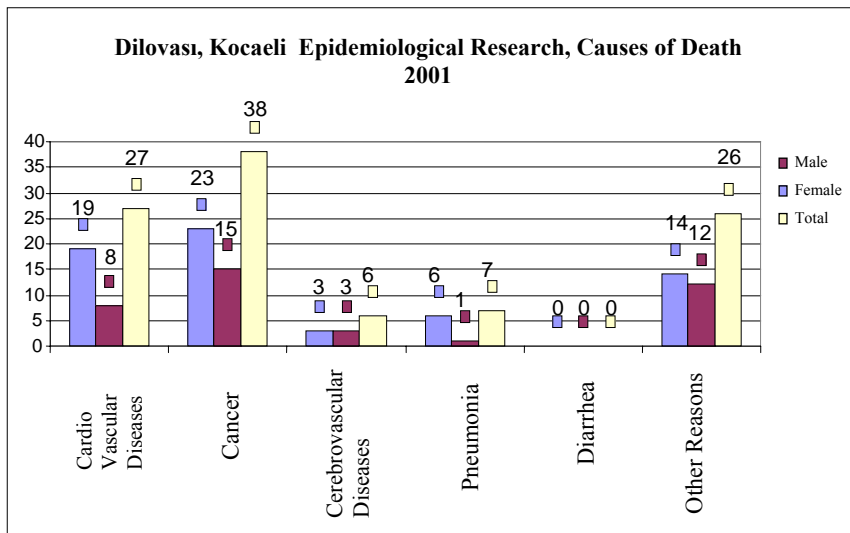
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Kocaeli is located in the Çatalca-Kocaeli Region of Marmara Region. It is surrounded with Sakarya province in the east and south-east, Bursa province in the south, Yalova province, İzmit Bay, Marmara Sea and Istanbul province in the west, and Black Sea in the north. Surface area of Kocaeli province is 3,505 km<sup>2</sup>. It is located on an important crossroads uniting Asia and Europe. İzmit Bay which is a natural port is a busy maritime line. Dilovası quarter of Gebze district in Kocaeli which is composed of 8 districts is one of the most important industrial areas of Turkey.

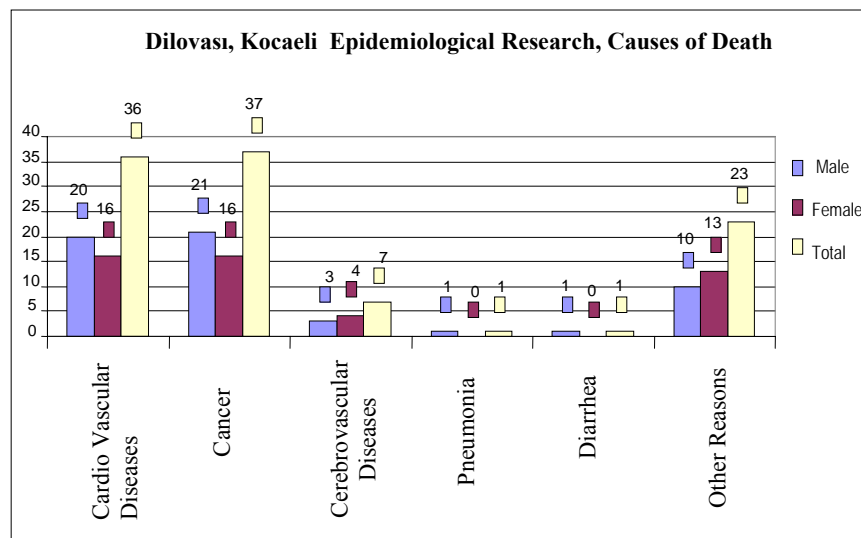
There are serious environment and health problems in the area due to the Dilovası Organized Industrial Area. Different institutions have carried out studies in different periods in order to reveal the health problems experienced in the area. It is possible to have an idea of the problems experienced in the area by summarizing these studies.

A- According to the result of epidemiological research carried out by the Ministry of Health in Dilovası area in Kocaeli, **deaths due to cancer** rose up to the first rank surpassing the deaths occurring due to cardiovascular diseases. As it is known, deaths due to cancer rank the second, following the deaths occurring due to cardiovascular diseases in the list of death causes on the country-level. The fact that deaths due to cancer rank the first in this area is a meaningful finding, making one think that health problems leading to increase in cancer occurrence are experienced there.

<b>Dilovası, Kocaeli Epidemiological Research Causes of Death 2001</b>			
<b>DISEASES</b>	<b>MALE</b>	<b>FEMALE</b>	<b>TOTAL</b>
CARDIOVASCULAR DISEASES	19	8	27
CANCER	23	15	38
CEREBROVASCULAR DISEASES	3	3	6
PNEUMONIA	6	1	7
DIARRHEA	0	0	0
OTHER REASONS	14	12	26



<b>Dilovası, Kocaeli Epidemiological Research Causes of Death 2002</b>			
<b>DISEASES</b>	<b>MALE</b>	<b>FEMALE</b>	<b>TOTAL</b>
CARDIO VASCULAR DISEASES	20	16	36
CANCER	21	16	37
CEREBROVASCULAR DISEASES	3	4	7
PNEUMONIA	1	0	1
DIARRHEA	1	0	1
OTHER REASONS	10	13	23



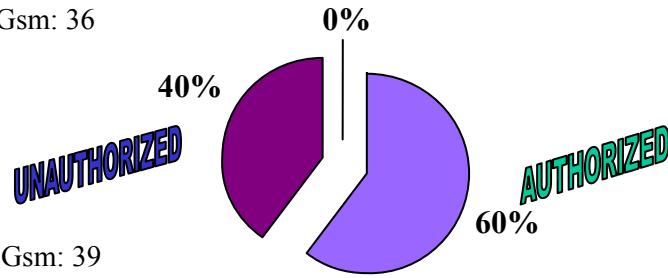
The below information are reached in the study carried out by the General Directorate of Basic Health Services on the status of enterprises in Kocaeli Organized Industrial Area concerning authorization, emission permit, and discharge permit.

**In Dilovası Organized Industrial Area;**

**Status of 1<sup>st</sup> and 2<sup>nd</sup> Class Non-Hygienic Establishments (Gsm)**

**Dilovası OSB Gsm Status Authorization ( 1<sup>st</sup> and 2<sup>nd</sup> Class Gsm)**

Number of 1<sup>st</sup> Class Gsm: 36  
Authorized: 18  
Unauthorized: 18

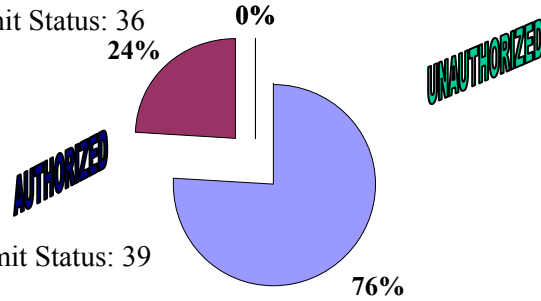


Number of 2<sup>nd</sup> Class Gsm: 39  
Authorized:27  
Unauthorized:12

**Status of 1<sup>st</sup> and 2<sup>nd</sup> Class Gsms' Class in relation to Emission Permit**

**Dilovası OSB 1<sup>st</sup> and 2<sup>nd</sup> Gsms' Discharge Permit Status**

1<sup>st</sup> Class Gsm Emission Permit Status: 36  
Authorized: 21  
Unauthorized:15



2<sup>nd</sup> Class Gsm Emission Permit Status: 39  
Authorized: 3  
Unauthorized: 36

**B-** According to the observation report of the Ministry of Labor and Social Security on Work Health and Safety in Dilovası Organized Industrial Area (OSB), below information in the relation to the area are achieved.

Dilovası Organized Industrial Area; industrialization process in Dilovası started in 1968 and fastened more in 1987 when the quarter became a municipality. In 1997 initiatives were started to be taken in order to become an OSB and OSB was registered on 22/05/2002 with the registration number 204. Dilovası Organized Industrial Area was approved on 14/10/1997 by location selection commission and was determined on a topographic map of 1/25000 scale as 1233 hectares.

Dilovası Organized Industrial Area is a mixed OSB due to the various industrial facilities performing business under its structure. 167 enterprises are performing business within the area. The following can be said concerning the distribution of 167 enterprises performing business in Organized Industrial Area on the basis of their business areas and the number of workers employed by them.

38 % of the work places established in Dilovası Organized Industrial Area perform business in the metal sector, 20 % in the chemistry sector, 13 % in the sector of storage, and 7 % in the sector of mining.

30 % of the work places in Dilovası Organized Industrial Area employ 50 and more workers. More than a thousand workers are employed in two work places, 500-1000 workers in two work places, 250-500 workers in 12 work places, 50-250 workers in 25 work places. 62 % of 34 work places which have high pollution potentials and are taken under the scope of inspection employ more than 50 workers.

In Dilovası Organized Industrial Area, 65 % of 116 work places which are obliged to get business certificates do not have such certificates.

The 62 % of 34 workplaces, which perform business in Dilovası Organized Industrial Area and are taken under the scope of inspection employ, more than 50 workers and are obliged to employ work place physicians. There is no work place physician in 65 % of these work places.

Result of the Study; In İSGÜM [Central Directorate of Work health and Safety] inspection carried out with reference to hazardous chemicals and cancer-causing chemicals creating risk regarding the employees health in 34 work places with high polluting potential, performing activity in Dilovası Organized Industrial Area, 104 samples of gas, 88 samples of breathable dust, and 15 samples of heavy metals were taken and analysis were conducted using NIOSH reference methods.

In the work place atmosphere, there are hazardous chemical substances in low concentration in respiratory area of the workers. Heavy metal concentration within the gases given to the atmosphere from the work place in the samples taken from the respiratory area of workers working in high places like crane operator is high.

In works with chemical substances, the employer is obliged to prevent the exposure of the workers to such substances, to minimize such

exposure when prevention is not possible, and to take all the necessary measures in order to protect the workers from its hazards.

The employer is obliged to decrease the risks by applying the below measures with sequence of priority in order to remove or minimize the risks created by chemical substances hazardous with respect to the workers' health and safety:

1. Appropriate process and engineering control systems should be chosen and appropriate materials and equipments should be used in order to prevent or minimize the emission which can create risks with respect to the workers' health and safety.

2. Collective protection measures such as appropriate work organization and sufficient air conditioning system should be applied in order to prevent the risk at its source.

3. In case the measures taken to protect the workers collectively from negative effects of hazardous chemical substances are not sufficient, personal protection methods should be applied with these measures.

4. Health control according to the characteristic of the risk should be done.

5. In case the employer is not able to show with an appropriate method that protection from and prevention of the hazardous chemical substances are sufficiently provided, regular measurement of the chemical substances which can create risks for workers' health in the work place atmosphere should be conducted.

6. The employer should take protective and preventive measures in each case where professional exposure limits are exceeded in order to remove the situation immediately.

7. Hazardous concentrations of flammable substances and hazardous amounts of chemically instable substances should be prevented in the work place. The existence of spill sources that can cause fire and explosion in the work place should be prevented. Necessary measures should be taken in order to prevent that the workers are harmed by the harmful physical effects of chemically instable substances and mixtures in case of fire and explosion caused by flammable substances.

8. Design, manufacture and supply of work equipments and protective systems supplied for the protection of workers should be in accordance with the legislation in force with regard to health and safety. (Regulation concerning the equipments and protective systems used in potential explosive mediums, which became effective being published on the Official Gazette dated 27/10/2002 and numbered 24919)

9. Process design should be done appropriately and necessary engineering control measures should be taken in order to prevent or minimize the diffusion of carcinogenic and mutagenic substances in the work environment.

10. The emission of carcinogenic or mutagenic substances from the work environment from their sources with local or general air

conditioning systems or with other methods should be performed in a manner so as not to damage public health and environment.

11. Appropriate measurement systems should be available for the early determination of cases where carcinogenic or mutagenic substances are released to the environment as a result of any accident or in any unexpected manner.

12. Appropriate work methods and processes should be used.

13. Appropriate personal protection methods should be used in cases where collective protection can not be provided and / or exposure can not be prevented with other measures taken.

The amount of carcinogenic or mutagenic substances and their preparations and the substances containing them, produced and used in the work place,

- The number of workers exposed
- Protective measures taken
- Type of protective tools and supplies used
- Shape and level of exposure
- Whether substitution is done or not should be notified to the

Ministry of Labor and Social Security.

Health inspection results should be taken into consideration for the protective measures taken in the work place.

For this reason, it would be useful to perform health control on the workers in 34 work places which are known to cause negative impact with respect to a certain disease or health, where exposure to hazardous chemical substances is experienced, which have high pollution potentials. The health control of the workers should be done regularly especially in divisions and works where there is the possibility of being affected by work conditions and, in cases where the risk is on an unacceptable level.

In works performed with carcinogenic substances, health control to be applied to the workers should be conducted before the exposure starts and continued on regular intervals afterwards. Health control certificates should be kept in the personal files of the workers for 40 years.

C – According to the “Pre-Report of the Study of Death Causes in Dilovası Area”, carried out by the Public Health Department, Faculty of Medicine, Kocaeli University; between 1 January 1995 – 10 October 2004, 493 deaths in total were experienced (burial authorization of which are given). **32.3 % of the deaths** experienced during approximately eight years are due to **cancer** according to the records available. Again according to the records, 44 % of the deaths experienced due to cancer are due to lung cancer, whereas 19.5 % are due to stomach cancer.

<b>Cancer type</b>	<b>Number</b>	<b>%</b>
Lung	70	44.0
Stomach	31	19.5
Leukemia	14	8.8
Bone marrow	9	5.7
Larynx	7	4.4
Liver	7	4.4
Prostate	6	3.8
Kidney	6	3.8
Brain	1	0.6
Colon	1	0.6
Uterus	2	1.3
Unknown	5	3.1
<b>Total</b>	<b>159</b>	<b>100.0</b>

<b>Causes of Death</b>	<b>Number</b>	<b>%</b>
Hearth diseases	235	47.7
Cancers	159	32.3
Cerebral haemorrhage	43	8.7
Infections	11	2.2
Restrictive pulmonary syndrome	7	1.4
Infantile paralysis	6	1.2
Other	24	4.9
Unclassifiable	8	1.6
<b>Total</b>	<b>493</b>	<b>100.0</b>

Distribution of the causes of death (1995-2004)

According to the death records of State Institute of Statistics, 12.5 % of the deaths in Turkey are due to cancer. According to the data presented by the World Health Organization in World Health Report 2004; on the other hand, 12.5 % of the deaths experienced in the world are due to cancer and 17.5 % of cancer associated deaths are due to lung cancer, whereas 11.9 % are due to stomach cancer.

**D-** Worker health screening was done by the Directorate of Kocaeli Metropolitan Municipality on 31/05/2001 in “Diler Demir Çelik End. Ve Tic. A. Ş.” and associated subsidiary establishments in Dilovası-Kocaeli. **Lung pathologies** and heart pathologies which could especially be

related to foreign substances exposed in work environments were found to be on serious levels.

Factory Name	Number of healthy workers	Number of diseased workers	Total
Diler Demir Çelik End.ve Tic.A.Ş.	243	19	262
Resa Demir San.	348	9	357
Kadir Aydođdu	19	2	21
Mimsan İnş.Mon.San.A.Ş.	61	4	65

**SO<sub>2</sub> and smoke** values are measured on a daily basis in 6 (six) different areas in Kocaeli province by Kocaeli Provincial Directorate of Health. When the values measured in Dilovası area are considered, it is seen that the values increase more and more every year and that they have reached a hazardous level regarding human health.

It is possible to say as a result of all these summarized studies that there is a serious health and environment problem in the area. For the solution of this problem, studies are carried out by different institutions. Our Directorate is also carry out its studies in cooperation with Kocaeli University, Hacettepe University and İzmir Ege University. It is possible to advice the following in general for the solution of the problem.

In order to solve the area's environment and health problems, serious measures should be taken regarding the enterprises which the source of the problem. Rehabilitation studies should rapidly be started in relation to enterprises without authorization and without discharge permits and enterprises causing environment pollution by working in unhealthy manners, though having permits and authorizations. Work flow processes of the enterprises should be corrected.

If it is considered necessary, some enterprises should move from the area.

In case the enterprises want to construct waste treatment facilities, appropriate reduced credits and subsidies should be provided by the State and this practice should be generalized to all the enterprises in the overall country.

Since the operation of the waste treatment facilities are very expensive, the use of existing waste treatment facilities are also neglected (by the enterprises). In order to ensure the full capacity operation of waste treatment facilities by preventing such negligence, it is necessary that the prices of the electricity used in waste treatment facilities should be reduced by the State.

The system of constructing collective waste treatment facilities by more than one enterprise should be fostered by the Municipality.

The establishment of new enterprises in the area should be stopped.

Air quality of the area should be kept under control with continuous measurements. Heavy metals and other parameters besides SO<sub>2</sub> and smoke should be started to be measured in the air. These measurements can be performed making use of a pool budget of the enterprises in the area formed by the Municipality.

Several measurement stations should be constructed in the area by the Directorate of Hygiene.

Chimney gas measurements of the enterprises in the area should be conducted and controlled routinely.

It should be provided that health statistics are kept regularly.