The share of air pollution due to gaseous pollutants in Isfahan

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A B S T R A C T

The issue of air pollution in the country's metropolises and legislation on it goes back to the municipal law in 1334. In paragraph 20 of Article 55 of this law, the issue of reducing air pollution has been considered, but this issue has been threatened since 1995, when pollution reached the border. It was considered and caused the law on how to prevent air pollution to be approved this year. Most of the year, the share of pollution was given to motor vehicles with 58% and the share of residential, commercial and industrial units was set at 42%. In 1994, other activities such as developing the first standard for vehicle exhaust emissions, burning motor vehicles and technical inspection Cars were established This year, the results of preliminary research by the Japanese group JICA showed that the share of mobile resources is 77% of the total air pollution in the short city of Tehran. Gasoline station fuel consumption information is obtained on a monthly basis in the central area of Isfahan (Isfahan, Khomeini Shahr and Falavarjan), 69 of which are in the 15 districts of Isfahan. This year, the central region of Isfahan has consumed about 1,070 million liters of fuel, which is an average of about 81.6 million liters. Incidents in recent years regarding the increase in air pollution, the need to know more about the causes of these accidents has been identified. Cars are a major source of chemical fog, and heavy reliance on cars for transportation and intercity travel in large cities has led to the release of large amounts of unburned hydrocarbons and nitrogen oxides. Environmental control requires appropriate measures to control air pollution, proper water quality, and waste management and reduce pollution through fuel. It is worth noting that pollution control and prevention policies are effective when power plants, factories pay serious attention to these policies in their programs (Liu. 1999). In recent decades, the issue of air pollution due to the environmental effects of substances such as chlorofluorocarbons, ammonia vapor or carbon dioxide has also spread. These pollutants have global effects such as acid rain, global warming and ozone depletion.

The main factor in increasing air pollution in the past has been the increase in global population. Population growth has increased people's living standards and increased consumption of fossil fuels. In general, the combustion of fossil fuels such as coal, oil, gas and gasoline is the main cause of air pollution.

Keywords: Air Pollution, Gas Pollutants, Isfahan

INTRODUCTION

1-1- Problem solving

Air pollution is mixed with taro and the fabric of modern life. Entering the period of industrial development and technological progress, followed by the rapid growth of urbanization and the need for service and technical classes in the city, the increase of motor vehicles and the establishment of factories and polluted industries near large cities are among the main causes of pollutants. And air pollution is one of the most important environmental crises in the metropolis of Isfahan and has had devastating effects on the environment of this city, damaging the health of citizens and making life in this city costly and even dangerous. Air is the ocean in which we breathe. 99.9% of air is composed of nitrogen, oxygen, steam, water, and inert gases. Human activities can introduce substances into the air, some of which can cause problems for humans, plants and animals. The issue of air pollution in the city of Isfahan requires accurate and effective knowledge of the sources and factors that have caused the spread of pollution in the city. The complex problem of air pollution in Isfahan due to various factors has become present in recent decades, which requires accurate and effective knowledge of the sources and factors that have led to its publication. The physical and horizontal development of the city of Isfahan and its neighboring cities during the last 30 years has been such that now the legal boundaries and privacy of the cities of Isfahan, Khokinshahr, Shahin Shahr, Falavarjan, Mobarakeh, Lenjan are connected.

Air pollutants are as follows:

* Natural resources: such as fine dust

* Human resources: such as transportation, commercial, agricultural, industrial activities.
* Gases: such as carbon monoxide, sulfur dioxide, nitrogen oxides, etc.
- Gaseous pollutants
-Determination of concentration

Volatile organic compounds (VOCs) are organic chemical compounds that are subjected to high vapor pressure at room temperature. This high vapor pressure is due to the low boiling point of these materials. A significant number of molecules of these materials are evaporated or sublimated. It becomes gaseous and spreads in the surrounding air. For example, formaldehyde has a boiling point of -19 degrees Celsius. Formaldehyde is separated from the dye and released into the air. Volatile organic compounds are highly diverse and ubiquitous. Some are found in human hands and some are found naturally. These substances play a key role in establishing communication between plants. Some important organic compounds are: benzene, toluene, ethyl benzene, styrene, formaldehyde and xylene mixtures. Some of these volatile organic compounds are very dangerous and can cause many health problems. Formaldehyde, for example, is a teratogenic, toxic, mutagenic, and carcinogenic substance that is classified as a transgenic organic compound.

Sarkhosh and his colleagues used a portable photocheque device with a PID10 / 6ev ultraviolet lamp to measure volatile organic matter. This device has a 0.5 micron filter that draws in air at a speed of 200ml / min and detects a variety of volatile organic substances by UV detector. Prior to each sampling, the device must be calibrated by the manufacturer's blue carbon fliter. The operating range of the Photocheck VOC meter is between 1 and 20,000 PPM. This device is able to analyze air and VOC concentrations in a very, very short time of 2 seconds. Air dust has both natural and human origins. Human activity and wind power often cause dust to be suspended in the atmosphere (Zobeck & Amante-Orozco, 2001). Soil erosion in arid and semi-arid regions is the main source of atmospheric dust. In some sources, the anthropogenic share of total minerals in the dust is estimated at 5-7% and in some other sources, more than 30-50% of atmospheric dust is attributed to human activities. (Coz et al., 2009).

Primary pollutants (emitted directly from sources) are the result of chemical reactions and lead to the formation of other components in the pollutant, which are called secondary pollutants and can exist in the form of gases and suspended solids.

Air is one of the five essential elements (air, water, food, heat, light) for human survival. Each person breathes about 22,000 times a day and needs approximately 15 kg of air per day. All impurities that are inhaled in the air It does not harm human health and it depends on several factors, including the type of impurity and its percentage in the air, etc., various types of pollutants due to natural and artificial activities (caused by human activities) on the planet They enter the atmosphere. Therefore, air pollution generally means the presence of a foreign substance in the air.

Environmental pollution comes from various sources. With the advancement of human civilization, the development of technology and the growing population, the world is currently facing a problem called air and soil pollution that threatens the lives of the inhabitants of the planet, so that in every country, environmental protection has received serious attention. . Today, environmental pollution knows no borders, so that the people of one city or even one country are not safe from the effects of pollution in the cities of another country.

Air: A modification to describe a mixture of gases located in the adjacent layer of the earth's surface (atmosphere).

The average molar mass of air can be obtained based on the sum of the product multiplications in molar masses of its main components. Throw. Damages crops and grains. A number of atmospheric pollutants are primary pollutants. Because they enter the jumbo directly from chimneys, exhausts, etc. Another category, called secondary pollutants, is created by the chemical combination and interaction of a primary pollutant with certain air components, such as water and steam.

The background of the researcher of McLann and colleagues in the year (2018) was operating for the emergence of the Akish city released in the year (2006). In this study, the rate of oil-rate pollutants from the point of view was calculated. Based on the research, it was found that by modifying and modernizing equipment in the industries, it could be a significant reduction in the rate of pollutant rates. Partners and colleagues in 2018 aimed at determining the release of organic organic compounds from one of the largest petrochemical industries in China to investigate the effect of the existence of organic organic compounds in the atmosphere at PM2.5. The industry operates in three sewing oil sections, the arm of hydrocarbons and the production of allenes. To identify the organic compounds of the device (GC-PID / FID). A total of 68 organic organic compounds analyzed by the device, ethylene methyltentonte, chloroform, 2 and 3 diohythlet 1 and butanan concentration. According to the results, it was found that the essential organic compounds directly affect the concentration of PM2.5. Therefore, the reduction of the release of esophagic organic compounds in the environment reduces the formation of a particle of the fine-tusted The sources of the essential organic compounds include gasoline from Petro Chemical Industries, the use of alternatives. According to the National Iranian National Release Loss, about 32.25-5 million tons of volatile organic compounds have been published from 2002-2013 from various industrial resources. The refinery industry has the most share of the refinery. Publishing the organic compounds of the petrochemical industry are often released by the ferrase and tanks. Allenes and alkins had the highest contribution (5.55% and 47.7%) in other organic compounds, and also amongst the aromatherapy of benzene, toluene and xyllins, the highest peripheral concentration. 3.1. Importance and necessity by measuring the amount of ozone high-rise with balloons (ozone) is determined that the maximum of this value is located about a half kilometer, which is called the range of

the ozone. This is a very thin layer of ozone that maintains the inhabitants of the earth as much as the ultraviolet radiation of the sun. Ultraviolet radiation with wave wave length less than 3 /. Energy micrometer is enough to create skin cancer in humans and ultraviolet radiation at 26 /. Micrometers can destroy the nicoley acids in DNA, which is a substance that transmits a genetic map from generation to generation. Extreme increase in eye injuries, including the destruction of the eye-disorder of the immune system, has a negative effect on plants, reducing the growth of marine phytoplankton. Given the supernatural significance of the odor and its toxicity of agricultural in agriculture, the measurement of this gas is a significant importance in the slightly and degradation of crops and livestock and poultry. As a result, the environmental threat by the release of pollutants is threatening the health of the stable environment and the pain disorder of the affairs of the day due to the entry into allowed levels of the actions that require these studies. 4.1. The purpose of the research is to result in extreme air pollution, with a high concentration of gasoline steam, sulfur oxides and suspended particles and .... Today, sulfur smokes are caused by combustion of fossil fuels in air pollutants. Although the role of fixed resources in the production of smoke is much more effective than motor vehicles and cars, the share of cars in the air pollution is large. If the suspended particles are not specific, they can calculate the radiant diameter of the 8-liter diameter (comparative comparison of the full-range butter that falls at a speed equivalent to the fall of the particles collapsed). Most suspended particles have a equivalent diameter between 0.1 and 10 microns. The particles are more than the limit of vibration and random movements (braviynut), which usually grow up to a larger than 0.1 microns. Parts larger than 10 microns are also deposited quickly. For example, a magnitude of a magnitude of the 10 microns at a speed of about 20 cm per minute. The air quality is changing daily. Even when the amount of pollutants' logic is fixed, the determinants of climate change, such as wind speed, wind direction, thermal profile of the air masses, solar energy in order to carry out photochemical reactions and the durability of wind wind or rainfall, in particular, the variation of the air, and the factors in general mode are cleaned the air. The factors in general requirement will clean the air.

Clean air definition: Clean or natural air in dry matter consists of various components including nitrogen, oxygen, argon, carbon dioxide, neon, helium, methane, krypton, hydrogen, xynon, nitrogen dioxide and ozone with different values. Office should be noted that this type of air is on the oceans away from dryness or in areas away from population centers. Air Pollution: Air Pollution Air Pollution, like any other phenomenon, has different definitions. "Air pollution" is the existence of one or more polluted substances in free air to change that the time in the specified time can change the quality of the air into the loss of man, animal, plant and objects. In the collection of Iranian environmental laws, the purpose of "air pollution" is the existence of a one or a polluted pollution, including solid, liquid, gas radiation, freezing in the free air and, while it is possible to change its quality so that for human beings or other organisms or plants or structures, it will be harmful. What increases the importance of air pollution is the role of air as the most vital material to continue human life, various works, and the irreparable human pollution, and the limited human ability to control and reduce air pollution. According to the study, the concentration of violet-hydrocarbon compounds, and concentration (2.5.2), is more than summer in the winter, while the concentration of alkaces and allenes increases in the summer and autumn compared to the winter. The highest part of the Irosol layer was due to the existence of organic organic compounds, and isoprin is one of the main materials for the formation of the Irritis layer. Considering the result, the reduction of the existence of organic espalance of escaping and especially isoprin de defamer will affect the reduction of the formation of the Irr-layer layer. McLarn et al. In 2018, McLaren et al. Evilled to update the pollution of the Auckland city in 2006. The rate of release of air pollutants from the point of view of the spleen, the chimney was calculated. According to research, it was found that by modifying and modernizing equipment in the industries, a significant reduction in the rate of pollutant rates was created. To calculate the release of pollutants from the chimneys in the sources that faced the lack of data, using standard methods introduced by the European Environmental Organization and the Publishing Factors published by the American Environmental Protection Agency and based on the amount of fuel consumed, the rate of pollutants of the citations calculated. The most sources of pollutants related to the marginal industries of this city are related to the printing and color industry with esophabilicides of the volatile. In Table 0, the rate of pollutants from the spot resources and the table of 0-2 shows the share of various industries in the release (10pm). Factors Affecting Air Pollution: The destructive effects of air pollution of the cities have been considered due to economic damage and implications of human health and the environment from the past. Since air pollution is directly related to economic activity, any action in reducing air pollution, regardless of this, can lead to a reduction in the economic power of the city and reduce the social welfare of the city's residents. As another, the use of air pollution methods with considering them will not lead to progress. The subject of air pollution and events created by three times, due to changes in general, human activities, which is the mortality of the contamination of pollution. What we refer to is the complexity of the environment. The phenomenon of air pollution was created in the creation of the first turning on fire by humans and was cared. In urban areas, at the past times of coal, and the fuel, the cucumber periods have been imposed on human health and human life. As a result of the emission of active gases and carbon dioxide in the degradation of the stratosphere, the environment has been in the world of risk and pollution. Pollutants that enter the air through various industries are Sulfal dioxide (NO_2), carbon oxide, Ozone, ozone, Ozone and suspended particles smaller than 10 microns.

Urban pollution sources are expressed in two basic categories, which include: mobile sources and fixed sources. Fixed sources can be industries such as (chemical industry, non-metallic products, paper, food, wood industry and other active industries)

energy conversion, commercial, domestic, (power plants and refineries), passenger terminals (rail, air) , Land) and locations for the distribution of petroleum products.

-Dispersion of pollutants in the air:

Publishing sources are divided into linear, instantaneous and regional sources, and each of them has subcategories.

- Linear source: For highways and highways where cars are on the road in a row, or aircraft exhaust on the flight path.

- Regional source: It is referred to as a single chimney or several chimneys next to each other that create a source.

Instantaneous source: When a gas tank explodes, it causes air pollution.

Air quality models are used to predict the concentration of pollutants downstream of the source of pollutant production. The purpose of using these models is to mathematically investigate the effect of pollutants released into the atmosphere on the air quality of the earth's surface. Therefore, the models can determine whether the air quality in the desired location follows the standards or not!

Dispersion models vary depending on the source, and by calculating mathematically, the concentration of pollution on the planet can be estimated downstream of the wind path and at various distances from the chimney.

History of combating air pollution in Iran

The issue of air pollution in Iran's metropolises and legislation on it is related to the municipal law in 1334. In paragraph 20 of Article 55 of this law, the issue of reducing air pollution has been considered, but this issue has been considered since 1995, when pollution reached the border of threat, and caused the law on how to prevent air pollution to be approved this year. The amount of air pollutants released in 1986 has been calculated and the main share of pollution to motor vehicles with 58% and the share of residential, commercial and industrial units in total 42% has been determined. In 1994, other activities such as the initial development of vehicle emissions standards, gasification of motor vehicles and technical inspection of vehicles were established. The proposed scenarios for controlling and reducing air pollution included amendments in this field: 1- Standard of vehicles in terms of emissions, 2- Inspection and technical inspection of vehicles, 3- Quality of fuels, 4- Development of public transportation system, 5- Price policy Fuel laying, 6- Parking policy and traffic control, 7- Urban and land use planning policy, 8- Transport organizational structure.

The most important models of air pollutants are:

Lagrangian models - Eulerian models - Gaussian models.

Lagzanian models: These models use processes for the mass of moving air. And shows the dispersion of artificial particles. Tracing two neutral-density columns moving in the wind direction is a Lagzanzian measurement.

Gaussian models: These models are based on the probability of normal distribution of pollution in the column and in the direction of wind direction and based on changes in pollution concentration.

Yulerian models: This number of models determines the atmospheric emission of pollution by performing the equation numerically. These models determine the properties of the atmosphere by measuring the atmosphere that passes through a fixed point. A cup wind gauge as a sensor determines the properties of the wind used

Disadvantages:

1- The rate of fugitive emission of volatile organic compounds from the equipment of oil refining industries is not considered. This can lead to high uncertainty about the emission rate of volatile organic compounds.

2- Updating the publication of this city after a few years only includes point sources and other sources such as surface and linear are not considered.

No verification has been done in the work and only the use of standard methods has been considered as a criterion for the accuracy of the data.

Emission coefficient of industrial units:

Industrial units use different fuels to produce manufactured products. Also, the production processes of each product are different. In general, the European Environment Agency divides the emissions of industrial units into two parts:

1- Emission of pollution due to fuel combustion

2- Emission of production process pollution

Some industries can use any fuel; But others may use special fuels such as gas.

The European Environment Agency has given the emission coefficient of pollutants from fuel combustion of industrial units in general.

Table 3-3 shows this emission coefficient for gaseous pollutants from combustion of different fuels

Pollution emission is a method-dependent production process. But in general, when we do not have information about the production method, we can use the overall diffusion coefficient. The emission coefficient of some industries is presented in Table 4-4.

According to studies, for every 3 to 4 minutes of refueling, 40 to 50 ml of fuel evaporates. Abdoli et al. Also calculated the average loss of gasoline per cubic meter of gasoline consumed to be about 5.35 liters. 2 liters of it is due to the small head during refueling and 3.35 liters is due to the evaporation of gasoline in the station. Mir Mohammadi et al. Also calculated the amount of energy loss in the country's gas stations as 2.5 liters per cubic meter.

The introduction of the city of Isfahan is based on the reports of the refineries that produce it and the National Company for the Distribution of Petroleum Products.

Car fuel system emission inventory

Energy is considered as the driving force of a country's economy and its production is one of the most important tasks of any government. Among the various industrial and economic sectors, the transportation sector is one of the most energy consuming sectors. The main fuel in the transportation sector is fossil fuels, especially gasoline and gas oil. Light vehicles in the 15 districts of Isfahan in 1998 consumed about 779 liters of Euro 4 gasoline, 36 million cubic meters of natural gas.

The refinerian fuel distribution department is the first part of the fuel distribution system in the country. Different fuels (gasoline, gas oil, aircraft fuel, etc.) are transmitted by various ways such as pipelines, road tankers, ships, and rail tankers to the warehouse and fuel sales. If existence or fuel imports, fuel transfer from the border terminals is transferred to the warehouse and fuel sales. If there is export or import fuel, the borderline terminals are transferred to the warehouse terminal and the sale of fuel or vice versa. In the next step, the suicide is transmitted through road tanks to the petrol position and eventually the final delivery of data is given. During the process of fuel distribution, which is described above, non-methachic compounds are in the air. In general, the gas waste in the following sections: 1 In the maintenance tanks of oil in oil prices 2 in loading of fuel transport tanks in oil products during the transportation of tankers 4 in storage tanks 5 in burning time 6 in burning time of vehicles due to the amount of daily consumption of gasoline and transferring this product to lectures in many parts, the large amounts of it during transfer, loading, evacuation, and saving evaporated, which is considered as an important pollutant source, and the use of these compounds with other elements and other materials, and the desire to combine these compounds in the environment of the undesirable effects of physiology, environmental and economic zippers. These compounds have been emerging for human health, which can be implemented in the system of nervous system, the effect of respiratory system and genetic mutation. Also, the release of these pollutants in the atmosphere causes the environmental destructive effects including acid rain, smoke, increase the planet's temperature and climate change. Richorz 1 and his colleagues (1990) conducted comprehensive studies on the release of non-methane esophagic compounds during the distribution process of the cities, which was based on the sectation of the chairmen of the mayor of the European Environment Organization. Petrol release and organic fibers of gasoline gasoline: gasoline combines multiple organic matter obtained from distillation, except for the crude oil component. Most manufacturing gasoline include hydrocarbons between 4 and 12 carbon atoms in each molecule, which are called MS44-cure substances. The octanes (C8H18) are considered as one of the specific compounds in gasoline. In general, the ratio of hydrocarbons in gasoline is dependent on the gasoline oil refinery, the type of crude oil and the oxygen-petroleum number. The gasoline of its engine alone is not a net pure hydrocarbon, but a combination of oil hydrocarbons is a venture force that is extracted in the refinery process in the Bulf refinery in various degrees of quantity and quality, depending on the market needs and economic and environmental constraints with its own specific features. For this reason, the production standards of the production and consumption of these products are defined and implemented with regard to national, regional, global, and climate, social, parameters. Steel Steam contains about 90% of alloys, 2% of calibration and 9% gasoline and 8% of the elements. Hydrocarbonic vapor, by combining compounds with oxides with nitrogen oxides, causes the ozone disease, which causes respiratory diseases, restics, asthma and solely. Especially the existence of gasoline in these carcinogenetic vapors. In Table 07, the toxic substances are mentioned in gasoline. The breathable of the steam is the toxic and it is a headache, dizziness and nausea. Exposing its low values to cause damage to the organs, especially the lungs, eye, nose, skin and eventually cause death. The permissible limit of the exposure is 25ppm.

Hazardous air pollutants (hips) are also more harmful than other compounds in particular. In other words, the harmful effects of compounds (hips) are much more severe than volatile organic compounds (vocs). Gasoline also contains a lot of dangerous air pollutants. The most important constituents of gasoline hips include: gasoline, isopropyl gasoline, ethyl benzene hexane, methyl tertiary butyl ether, naphthalene, toluene and 2,2,4-trimethylpentane. Photochemical fog phenomenon with reduced visibility, production of soot paste particles, acid rain, soil erosion and old buildings, destruction of aquatic ecosystems and forests, changes in global climate, ozone depletion, global warming, destructive effects on Plant and animal cells, seawater degradation, melting polar ice are some of the adverse environmental effects of gasoline degradation.

Not all air pollutants are regulated according to air quality standards. Under US Clean Air Act, the Environmental Protection Agency (EPI) is required to set national ambient air quality standards for six air pollution standards:

* Ozone (o3)
* Suspended particles (pm)
* Carbon monoxide (co)
* Sulfur oxides (so2)
* Nitric oxides (nox)
* Lead (pb)

These air pollutants are found all over the world and may come from primary or secondary sources. Of the six pollutants, particulate matter pollution and surface ozone are the most widespread health threats.

The US Environmental Protection Agency calls these pollutants the standard for air pollutants. Because they are called the main criteria by preparing the standards of human health. Secondary standards are another set of limitations intended to prevent environmental and property damage.

In areas where it is necessary to calculate the air quality index, the basis for determining the quality index is calculated from the base of 8 hours. In small areas, the one-hour air quality index will be much more preventive. In other materials, after calculating both the 8-hour and one-hour ozone indices to inform the public, whichever is greater is included in the report.

2- Air quality index for 8-hour ozone should not be equal to and more than 301. In a case where index calculations use more than 301 one-hour ozone quality index calculations and the reporting criterion is used.

3- The short-term quality index of NO 2 does not exist for values less than 200 and is used as a criterion in reporting and informing the public only in cases where the index is above 200.

+ These tables are provided by the Ministry of Health and Medical Education.

Estimation of gasoline overflow in Isfahan

The amount of overflow when refueling cars depends on the culture of the people and the low quality of gas stations. If the nozzle has an automatic cut-off, it will be severely reduced. Fortunately, most of the nozzles in Isfahan stations are equipped with high sensitivity automatic air circuit breakers. However, sometimes there is an overflow of gasoline. The average amount of gasoline pumped into the tank of vehicles is 32.3 liters. One out of every 8.3 cars has an overflow, the average amount of spilled gasoline was about 230 ml. It was also observed that due to inaccuracy in refueling to try to fill the tank, one in four cars overflows a drop from the nozzle, which is estimated at about 20 milliliters. Therefore, the amount of spilled fuel per 1000 liters of gasoline is:

+ * = Average gasoline per cubic meter

lit / m3 1000 = 857/0 =

* Calculate the evaporated gasoline output from the tank and underground tank

For every cubic meter of gasoline entering Baku leaving the ground tank, 1 cubic meter of gasoline vapor saturated air leaves the tank.

The specifications of Isfahan refinery gasoline and weather conditions are as follows:

Average ground temperature (for underground reservoirs) = 14 ° C = 57.2 degrees Fahrenheit

Average annual temperature of Isfahan = 16.4 degrees Celsius = 61.5 degrees Fahrenheit Steam pressure of Isfahan gasoline = 7.5 psi = 51.7 kpi - specific gravity 0.765

For every cubic meter of air that is emptied, one cubic meter of gasoline is replaced. Therefore, the mass of wasted gasoline vapor per cubic meter of refueled gasoline is 1.56 liters. Similarly, 1.56 liters of gasoline is wasted to fill the underground tank. Gasoline vapor pressure of Isfahan refinery varies between 44 to 61 kpi in summer and between 49 to 82 kpi in winter, its average is 51.7 kpi.

* Estimate gasoline wasted at stations

Therefore, for each cubic meter of fuel, 0.98 liters of fuel is evaporated to fill the car tank and 0.76 liters to fill the tank. Therefore, for each cubic meter of gasoline sold, 2.74 liters of gasoline (1 liter of fine head, 0.76 liters of evaporation from the tank and 0.98 liters of evaporation from the tank) evaporates. Therefore, the emission coefficient of evaporated gasoline in ordinary gasoline stations in Isfahan is calculated to be 2.74 liters per cubic meter of gasoline sold.

Loading fuel tanks

(EPA) provides the following relation for gasoline losses during tanker loading:

Where (LL) is the loss of gasoline in terms of emission factor, liquid vapor pressure in terms of MPSIA, molecular mass of gasoline vapor t (LB / OLE), liquid temperature t (in rank) and the efficiency of the water vapor recycling system.

The calculations for a 30,000 liter (8,000 gallon) tanker are as follows:

- S-1 publishing factor
- The average annual temperature of Isfahan = 16.4 degrees Celsius = 521.2 R

Gasoline vapor pressure at the mentioned temperature = 7.5 PSI

- Steam recycling system efficiency = 0
- Molecular mass of gasoline = 67

Therefore, for loading each 30,000 liter tanker in Isfahan, about 42.3 liters of it is evaporated. If according to the report (EPI) the load is equipped with a steam recycling system with 98% efficiency, the load of each tanker has about 0.85 liters of gasoline losses. The average load of gasoline in the Central Oil Depot in 24 hours is about 8 million liters. Therefore, the lost gasoline vapor for the system without recycling and with excess is 4,122,346 and 82,446 liters per year, respectively.

Waste loading of central gas station

A significant portion of gasoline is released into the fuel storage depot and into the air during loading. Shahid Mohammad Montazeri Warehouse with 59 tanks and storage capacity of 1.6 billion liters of all types of petroleum products: super gasoline, ordinary, kerosene, ordinary gas oil, low sulfur gas oil, light furnace oil, heavy naphtha and air fuels, case fuel Meets the needs of Isfahan region. This warehouse has 124 loading arms and 1500 tankers daily using and operating 32 pumps 24 hours a day

and meet the needs of major consumers in industries and supply channels and with 10 booster pumps of 18-inch and 24-inch product lines. Sends to Tehran.

The calculation of the amount of steam of organic compounds released in the fuel depot of Shahid Mohammad Montazeri in Isfahan depends on the number, type, material, color, construction conditions and volume of tanks and sealing equipment and loading times. Ambient air temperature, gasoline temperature and steam vapor pressure also play an important role. This warehouse stores 9 organic liquids in two types of fixed and floating roof tanks.

Method 1: In 2014, Beighami et al. Obtained volatile organic compounds from 9 organic matter stored in the Central Oil Depot. They found that 1,485,801 tons (VOC) of organic liquid storage reservoirs evaporate annually, of which 99.8% is floating reservoirs.

Method 2: Relationships related to the calculation of organic matter emission rates (EPI) are given. Software (TANKS) is also based on (EPI). Calculations with this software show that the Central Oil Depot emits 3,352,000 liters of gasoline annually. This value is for the case where the recycling system is not used. If recycling with 98% efficiency is used, this amount will be reduced to 67,000 liters

The amount of the release of the organic organic compounds of the 0.9 to 0.01 grams per cubic meter of the fuel is moving on each kilo of the pace of steam fuel pressure and the average of 0.06 grams per cubic meter of the fuel is shut down on each kilo of paced vapor pressure. Steam pressure at an average temperature of Isfahan is 51.7 kIL.S. If we use 0.96 release, we have 8,000,000 liters of gasoline in central oil bar. The Hazard1 airlines are more than the most compounds, with the other, the effects of HPS breathing doses are much more severe than the escape organic compounds (VOCs). There are plenty of dangerous air pollutants in gasoline. The most important HAPS compounds include: Yenzin, Isopropyl gasoline, hexane ethyl gasoline, methyl, butyl ether, naphthalene, toluene, and 2,2,4,4rd, methyltentant. Creating a photochemical smoke phenomenon with a reduction in the vision, production of fine-meat particles, the production of acid rain, soil erosion and old buildings, the destruction of the ecosystem and the forests, the change in global climate, the destruction of the ozone layer, the heating of the earth, the destructive effects in plant cells and the animal, the evaporation of seas of seas and polar ice, including the uneven effects of the ecovement of gasoline evaporation. Organic volatile in the fuel system, including cases: 1-VOC release from the production of gasoline production from the production of fuel 2-POC released by the gas transfer from the warehouse of the oil products of the oil products to the Tanker Fuel 3-Publishing the POD-based gasoline transfer from the packet transfer of the VOC fuel from the Tank Petroleum from the Tank of the Tank Box 5-Extrusing Treatment of the Underground Treatment Changes The Effect of Amplory-6-Evaporation The residues of the 6-eye-making plant, due to pouring fuel on the surface of the land, there are a large number of organic fibers in the gasoline, which, from various ways such as fine-solid gas, gasoline evaporation during gas refurbishment, gasoline evaporation during gas waste, evaporating gasoline gasoline, gasoline evaporation during gas cleaning, gasoline evaporation during gas purification, petroleum evaporation during gas reservoirs and gasoline gas, and ultimately gasoline gasoline, during gas treatment petroleum, gasoline evaporation during gas treatment petroleum, and gasoline canceled gasoline during gas treatment and gasoline gas, and ultimately, gasoline gasoline during gas pumps and equipment for gasoline, and gasoline canceled gasoline during gas treatment and gasoline gas, and ultimately, gasoline gasoline during gas pumps and equipment for gasoline, and gasoline cancerated gasoline during gas treatment and gasoline gas, and ultimately, gasoline gasoline during gas treatment petroacity and energy equipment can be achieved during gas treatment petroleum and gasoline, and afterwards. "Gasoline evaporation during petroleum petroaching and gasoline petroleum cancels, gasoline evaporation during gas repositories and gasoline gas, and ultimately, gasoline gasoline, during gas The release of pollutants during filling the fuel storage tanks in the position of gasoline without the control of the pollutants: In this method, the distribution of the release of the metal-mechanical compounds of the metal mechanical interface of 14 to 34 grams per cube of the fuel of the fuel is moving on each kilo of pacemate fuel pressure and on average 24 to 3 cubic meters of fuel, each of the kilograms of steaming pressure is steady. Protection of the burning stations during the breathing process of fuel storage tanks in the position of gasoline without the control of the pollutants: In this method, the distribution of the niche-enzymatic fiber coefficient of the 2 non-methane vertical coefficient of each fuel covered by each kilo of the pace of fuel vapor pressure and on the average of 3 grams per cubic meter of fuel, each kilogram of fuel vapor pressure. The release of pollutants during the process of refueling in the position of gasoline without the control of the pollutants: In this way, the distribution coefficient of the release of the metal-containing organic compounds between 22 to 52 grams per cubic meter of the fuel is shut down on each kilo of pacemate fuel pressure and on the average of 37 grams per cubic meter of fuel, on each koca, fuel vapor pressure. The release of contaminants during the overflow of fuel during the processing of gasoline without the control of the pollutants control: In this circumference, the release of the organic alloys of our non-metabolic volatile between 1 and 3 grams per cubic meter of the fuel is stepped on each kilo of Pascal fuel, and on average 2 grams per cubic meter of fuel in each kP, the fuel vapor pressure is powered. The vote for the spatial repeat coefficient of vehicles in the need for access to the actual fuel pressure was accessed. This pressure depends on the temperature during refueling. The gasoline profile of Isfahan refineries and the water conditions are as follows: the average temperature of the earth (for underground tanks) = 16.4 degrees of glyce = 57.2% of ForexHea Average medium of Event annual Nas = 7.4 degrees = 61,5 degrees ForexHeases Steelgas Stem Pressure = 7,5 PSI = 51,7kpa Special Species =

0.765 Each cube air that is evacuated, a gasoline membrane is replaced. Therefore, the mass of steel gas steam was refuge to 1.46 liters of gasoline meastery. Masterbars are used to fill the underground tank, 56.6 liters of gasoline

Laboratory methods for sampling and measuring gaseous pollutants

Measurement of air pollutants, whether in the exhaust gas flow from chimneys and exhaust vehicles or in the ambient atmosphere due to low concentrations of pollutants, requires sensitive and advanced equipment, experienced people and high accuracy. Measurement in these two environments (exhaust gas flow and Ambient atmosphere) has many similarities. Although the concentration of pollutants in the ambient atmosphere may be in the range of millions or billions, the concentration in the flow of exhaust gases such as chimneys of factories and cars may be in the range of several percent. In general, air sample is the amount of air from a place where the concentration of pollutants in it is equal to the average concentration of pollution in the total air from which the sample is selected.

* Some conditions regarding standard sample and sampling equipment and methods are as follows:

1- It must be selected from atmospheric air pollutant or exhaust gas flow, without any changes.

2. The density of the extracted air or gas is equivalent to the average density of the gas in the main air.

3- The concentration of pollutants in it is equal to the average concentration of air pollutants from which the sample is taken.

4. The amount of sample gas must be sufficient to comply with the requirements of the method with the equipment and tools used in the sample analysis.

5. The amount of volumetric flow of the total gas to be sampled must be determined.

6. The temperature and static pressure of the sample gas flow should be measured so that the gas volume can be calculated under standard conditions.

In general, the choice of sampling method depends on factors such as the type of contaminant, the method of sample collection and analysis.

Emission of pollutants in the fuel depot with a floating roof in the storage terminals and fuel sales without a pollutant control system:

Fuel storage method Emission coefficient of volatile organic compounds of non-methane 0.6 to 0.01 g per cubic meter of displaced fuel per kilopascal of fuel vapor pressure and an average of 0.06 grams per cubic meter of displaced fuel per KPa is the vapor pressure of the fuel.

If different parts of the fuel distribution system are equipped with air pollution control systems, emission correction coefficients can be used. The existence of a steam recovery system while filling all types of fuel tankers in the refinery is if the refinery fuel distribution center is equipped with the system. If steam is recovered, 98% of gasoline will evaporate. Therefore, if such a system exists in the refinery, the emission factor of pollutants while filling all types of fuel tankers should be multiplied by 0.98.

Existence of steam return system in the fuel storage tank of the gas station If the fuel storage tank in the gas station is equipped with a steam recovery system, 95% of the evaporated gasoline from the tank will be returned to it while filling the tank. Therefore, if there is such a system in the gas station, the emission factor of the pollutant while filling the tank should be multiplied by 0.95.

Existence of steam return system in the gas station refueling system is such that the gas station refueling system equipped with the above steam recovery system provides 85% of the evaporated gasoline during refueling of the gas station tank. Therefore, if there is such a system in the gas station, the emission coefficient of pollutants during refueling should be multiplied by 0.85.

Distribution of petroleum products by truck without pollutant control system in the fuel section of the refinery (equipped with steam pressure regulation system, refueling from the top or bottom of the truck) if the distribution method of our non-methane volatile organic compounds is between 14 to 32 grams per Each cubic meter of displaced fuel per kilopascal of fuel vapor pressure and an average of 23 grams per cubic meter of displaced fuel per kilopascal of fuel vapor pressure.

Verification of Ferrari VOC emission rate calculation results:

To achieve the emission rate of the equipment, the standards provided by the US Environmental Protection Agency have been used. To verify the calculated emission rate, the measurement data performed by the trusted environmental laboratory around Isfahan Petrochemical Company have been used. For this purpose, the release rate data is input to the screen view software.

During the transport and sale of volatile organic liquids, the vapors of these materials are transferred to the atmosphere. To reduce the emission of these vapors, Isfahan Petrochemical Company collects vapors when the truck is loaded by suckers and by sending it to the waste incineration system, it reduces the emission of these compounds to the environment. The total concentration of volatile organic compounds measured is 34.41. The total concentrations of pollutants calculated for wind speeds of 1 and 3 m / s at point 3 are 74 and 22 μg / m3, respectively, in relatively turbulent weather conditions. If the comparison of the measured and calculated values shows the proper matching of the data based on the order of magnitude (Order of Magnitude). Wind is not a constant flow of air and is constantly subject to changes and eddy currents at different scales. Atmospheric conditions are not clear at the time of measurement, so relatively turbulent conditions are considered in these calculations

The ultimate goal is to establish a permanent and regular warning system that can detect the increase of pollutant concentrations and possibly above the standard as soon as possible and inform the responsible authorities for immediate action. For example, in formulating sustainable air quality strategies in Iran, different stages have been considered, which are as follows:

1- Determining the annual emission inventory and the distribution of pollutants in the country

2. Identify different sources of air pollution

3- Consumption of various petroleum products in the country

4- Examining the different strategies of the countries of the world and selecting their appropriate and practical strategies according to the conditions of the country, such as climatic conditions, topography, type of pollution sources, economic, social, etc.

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