



THE GEON COMPANY
LA PORTE PLANT SPECIFICATION
for
VINYL CHLORIDE

PURITY	99.96 %
WATER	100 ppm wt. max
ACIDITY (as HCL)	0.5 ppm wt. max
ALKALINITY (as NaOH)	0.3 ppm wt. max
TOTAL IRON	0.25 ppm wt. max
NON VOLATILE MATTER	50 ppm wt. max
COLOR	COLORLESS
APPEARANCE	CLEAR
SUSPENDED MATTER	FREE OF
O2 IN VAPOR BEFORE LOADING (railcar)	200 ppm max

GC COMPONENTS

METHYL CHLORIDE	60 ppm wt. max
TOTAL LOW BOILERS *	7 ppm wt. max
ACETYLENE	0.2 ppm wt. max
TOTAL UNSATURATED C'4s **	30 ppm wt. max
VINYL ACETYLENE	10 ppm wt. max
1,3-BUTADIENE	8 ppm wt. max
TOTAL HIGH BOILERS ***	30 ppm wt. max
1,2-DICHLOROETHANE (EDC)	10 ppm wt. max
* INCLUDES METHANE, ETHYLENE, PROPYLENE, PROPADIENE, BUTANE, ISOBUTANE, and ACETYLENE	
** INCLUDES T-2 BUTENE, 1,3 BUTADIENE, AND VINYL ACETYLENE	
*** INCLUDES ETHYL CHLORIDE, CHLOROPROPENE, 1,1-DICHLOROETHANE, 1,1-DICHLOROETHENE, EDC, VINYL BROMIDE, cis-1,2-DICHLOROETHENE, and trans-1,2- DICHLOROETHENE	

Approvals:

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Date: 4/20/95

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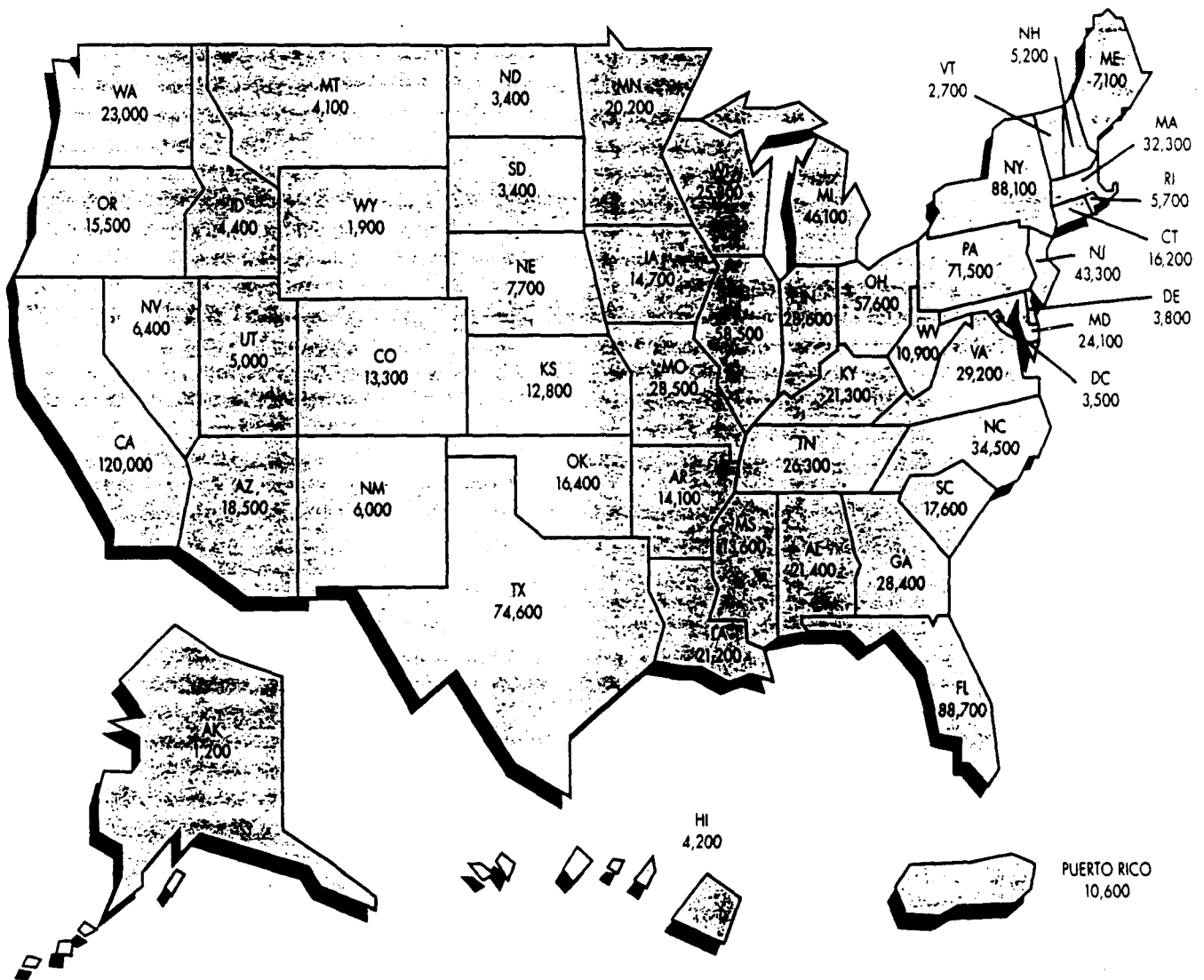
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** TOTAL PAGE.003 **

CANCER FACTS & FIGURES-1995



Estimated number of new cancer cases in 1995 by state, total: 1,252,000 (excluding Puerto Rico).*

*Excluding basal and squamous cell skin cancer and carcinoma in situ.

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mately 7,000 cases) and chronic lymphocytic (approximately 7,800 cases).

Mortality: An estimated 20,400 deaths in 1995.

Signs and Symptoms: Fatigue, paleness, weight loss, repeated infections, bruising easily, and nosebleeds or other hemorrhages. In children, these signs can appear suddenly. Chronic leukemia can progress slowly and with few symptoms.

Risk Factors: Leukemia strikes both sexes and all ages. Causes of most cases are unknown. Persons with Down syndrome and certain other genetic abnormalities have higher than normal incidence of leukemia. It has also been linked to excessive exposure to ionizing radiation and to certain chemicals such as benzene, a commercially used toxic liquid that is also present in lead-free gasoline. Certain forms of leukemia and lymphoma are caused by a retrovirus, HTLV-I (human T-cell leukemia/lymphoma virus-I).

Early Detection: Because symptoms often resemble those of other, less serious conditions, leukemia can be difficult to diagnose early. When a physician does suspect leukemia, diagnosis can be made using blood tests and biopsy of the bone marrow.

Treatment: Chemotherapy is the most effective method of treating leukemia. Various anticancer drugs are used, either in combinations or as single agents. Transfusions of blood components and antibiotics are used as supportive treatments. To illuminate hidden cells, therapy of the central nervous system has become standard treatment, especially in acute lymphocytic leukemia. Under appropriate conditions, bone marrow transplantation may be useful in the treatment of certain leukemias.

Survival: The 5-year survival rate for patients with leukemia is 38%, due partly to very poor survival of patients with some types of leukemia such as acute granulocytic. Over the last 30 years, however, there has been a dramatic improvement in survival of patients with acute lymphocytic leukemia; from a 5-year survival rate of 4% for people diagnosed in the early 1960s to 28% in the early 1970s to 52% in the mid-1980s. In children, the improvement has been from 4% to 73%.

Lymphoma

New Cancer Cases: An estimated 58,700 new cases in 1995, including 7,800 cases of Hodgkin's disease and 50,900 non-Hodgkin's lymphoma. Since the early 1970s, incidence rates for non-Hodgkin's lymphoma have increased over 65%. Incidence of Hodgkin's disease has declined over the same time period, especially among the elderly.

Mortality: An estimated 24,150 deaths in 1995 (non-Hodgkin's lymphoma, 22,700; Hodgkin's disease, 1,450).

Signs and Symptoms: Hodgkin's disease: enlarged lymph nodes, itching, fever, night sweats, and weight loss. Fever

can come and go in periods of several days or weeks. Non-Hodgkin's lymphoma: enlarged lymph nodes, anemia, weight loss, and fever.

Risk Factors: Risk factors are largely unknown but part involve reduced immune function and exposure to certain infectious agents. Persons with organ transplant are at higher risk due to altered immune function. Human immunodeficiency virus (HIV) and human T-cell leukemia/lymphoma virus-I (HTLV-I) are associated with increased risk of non-Hodgkin's lymphoma. Burkitt's lymphoma in Africa is partly caused by the Epstein-Barr herpes virus. Other possible risk factors include occupational exposure to herbicides and perhaps other chemicals.

Treatment: Hodgkin's disease: chemotherapy and radiation therapy are useful for most patients. Non-Hodgkin's lymphoma: early stage, localized lymph node disease can be treated with radiotherapy. Patients with later stage disease often benefit from the addition of chemotherapy. New programs using highly specific monoclonal antibodies directed at lymphoma cells, and improved techniques of bone marrow preservation, are under investigation for selected patients who relapse after standard treatment.

Survival: Survival rates vary widely by cell type and stage of disease. The overall 5-year survival rate for Hodgkin's disease is 79%. The overall 5-year survival for non-Hodgkin's lymphoma has steadily improved, and in the past 30 years has increased from 31% to 52%.

Skin Cancer

New Cancer Cases: Over 800,000 cases a year of highly curable basal cell or squamous cell cancers. They are most common among individuals with lightly pigmented skin. The most serious skin cancer is melanoma, which can be diagnosed in about 34,100 persons in 1995. Since 1970 the incidence rate of melanoma has increased about 10% per year. Incidence rates are over 10 times higher among whites than blacks. An additional 16,000 invasive nonmelanoma skin cancer cases will occur in 1995, mostly sarcomas, including Kaposi's sarcoma.

Mortality: An estimated 9,300 deaths this year, 7,100 from malignant melanoma and 2,100 due to other skin cancers.

Signs and Symptoms: Any unusual skin condition, especially a change in the size or color of a mole or other darkly pigmented growth or spot. Scaliness, oozing, bleeding, or change in the appearance of a bump or nodule. The spread of pigmentation beyond its border, a change in sensation, itchiness, tenderness, or pain.

Risk Factors: Excessive exposure to ultraviolet radiation; fair complexion; occupational exposure to coal tar, pitch, creosote, arsenic compounds, or radium.

Prevention: The sun's ultraviolet rays are strong

Prevention

Researchers estimate that if everything known about the prevention of cancer was applied, up to two-thirds of cancers would not occur. The following are areas in which certain health choices might reduce an individual's risk of cancer.

Smoking

Cigarette smoking is responsible for 90% of lung cancers among men and 79% among women—about 87% overall. Smoking accounts for about 30% of all cancer deaths. Those who smoke two or more packs of cigarettes a day have lung cancer mortality rates 12 to 25 times greater than nonsmokers. (See Tobacco Use, p. 22.)

Nutrition and Diet

Research is showing the important role nutrition plays in preventing cancer. Evidence indicates that people may reduce their cancer risk by observing these nutrition guidelines:

1. **Maintain a desirable weight.** Individuals 40% or more overweight have an increased risk of colon, breast, prostate, gallbladder, ovary, and uterus cancers. Physicians can recommend a suitable diet and exercise regimen to help maintain appropriate weight and body fitness.

2. **Eat a varied diet.** A varied diet eaten in moderation offers the best hope for lowering the risk of cancer.

3. **Include a variety of vegetables and fruits in the daily diet.** Studies have shown that daily consumption of vegetables and fresh fruits is associated with a decreased risk of lung, prostate, bladder, esophagus, colorectal, and stomach cancers.

4. **Eat more high-fiber foods such as whole grain cereals, breads, and pasta; and vegetables and fruits.** High-fiber diets are a healthy substitute for fatty foods and may reduce the risk of colon cancer.

5. **Cut down on total fat intake.** A diet high in fat may be a factor in the development of certain cancers, particularly breast, colon, and prostate.

6. **Limit consumption of alcohol, if you drink at all.** Heavy drinking, especially when accompanied by cigarette smoking or smokeless tobacco use, increases risk of cancers of the mouth, larynx, throat, esophagus, and liver.

7. **Limit consumption of salt-cured, smoked, and nitrite-cured foods.** In areas of the world where salt-cured and smoked foods are eaten frequently, there is higher incidence of cancer of the esophagus and stomach. Modern methods of food processing and preserving appear to avoid the cancer-causing byproducts associated with older methods of food treatment.

Sunlight

Almost all of the more than 800,000 cases of basal and squamous cell skin cancer diagnosed each year in the US are sun-related (ultraviolet radiation). Epidemiologic evidence shows that sun exposure is a major factor in the development of melanoma and that incidence increases for those living near the equator. (See Selected Cancers: Skin Cancer, p. 15.)

Alcohol

Oral cancer and cancers of the larynx, throat, esophagus, and liver occur more frequently among heavy drinkers of alcohol especially when accompanied by smoking cigarettes or chewing tobacco. (See Selected Cancers: Oral Cancer, p. 17.)

Smokeless Tobacco

Use of chewing tobacco or snuff increases risk of cancer of the mouth, larynx, throat, and esophagus and is a highly addictive habit. (See Selected Cancers: Oral Cancer, p. 17.)

Estrogen

Estrogen treatment to control menopausal symptoms can increase risk of endometrial cancer. However, including progesterone in estrogen replacement therapy helps to minimize this risk. Consultation with a physician will help each woman to assess personal risks and benefits. Continued research is needed in the area of estrogen use and breast cancer. (See Selected Cancers: Uterus [Cervix] Cancer, p. 12.)

Occupational Hazards

Exposure to several different industrial agents (nickel, chromate, asbestos, vinyl chloride, etc.) increases risk of various cancers. Risk of lung cancer from asbestos is greatly increased when combined with cigarette smoking. (See Environmental Cancer Risks, p. 20.)

Ionizing Radiation

Excessive exposure to ionizing radiation can increase cancer risk. Most medical and dental x-rays are adjusted to deliver the lowest dose possible without sacrificing image quality. Excessive radon exposure in homes may increase risk of lung cancer, especially in cigarette smokers. If levels are found to be too high, remedial actions should be taken.

Environmental Cancer Risks

The environmental causes of cancer include exposures in the community or workplace settings, as well as exposures determined by individual lifestyle choices (smoking, diet, medications, etc.).

The degree of cancer hazard posed by such risks depends on the concentration or intensity of the carcinogen in the environment and the exposure dose a person receives. These factors in combination create a range of risk. For example, in situations where high levels of carcinogen are present and where exposures are extensive, significant hazards may exist, but where concentrations are low and exposures limited, hazards are often negligible.

Risk Assessment

To protect people against unsafe exposures, risks should be assessed so that appropriate environmental standards can be set. **Risk assessment** is a two-step process: identifying the toxic properties of potential oncogenic hazards and measuring the extent of human exposure.

The first step, **hazard identification**, evaluates the chemical or physical nature of hazards and their oncogenicity in observed clinical and epidemiologic studies and in laboratory tests using animals or cell systems. Special attention is given to any evidence suggesting that cancer risk may increase with dose (dose-response relationships).

The second step, **exposure measurement**, determines the levels of hazards in the environment (air, water, food, etc.) and the extent to which people are actually exposed (how much they eat of a particular food, use a particular water source, etc.). Knowledge of how the body absorbs, metabolizes, and excretes chemicals or is exposed to radiation sources is essential to determine accurately the actual carcinogenic dose delivered to humans.

Unfortunately, evidence of risk for most potential carcinogens usually rests on the results of high-dose animal experiments or on human observations where high-dose exposures have occurred. To use such information in setting human safety standards, scientists must extrapolate from animals to humans and from high-dose to low-dose conditions. Both extrapolations involve much uncertainty; therefore conservative assumptions are used so that risk assessment will err on the side of safety. For cancer safety standards, only increased risks of one case or less per million persons over a lifetime are usually accepted.

Safety standards developed in this way for chemical or radiation exposures are the basis for federal regulatory activities at the Food and Drug Administration, the Environmental Protection Agency, and the Occupational Safety and Health Administration. The application of laws and procedures by which standards are implemented and risks are controlled is called **risk management**.

Chemicals and Radiation

Not all chemicals or all forms of radiation cause cancer. Only a limited number of chemicals (for example, benzene, asbestos, vinyl chloride, arsenic, aflatoxins) show definite evidence of human carcinogenicity or are probable human carcinogens based on animal experiments (for example, chloroform, dichlorodiphenyltrichloroethane [DDT], formaldehyde, polychlorinated biphenyls [PCBs], polycyclic aromatic hydrocarbons). The only forms of radiation proven to cause human cancer are ionizing radiation (for example, x-rays, radon, cosmic rays) and ultraviolet radiation (principally UV-B radiation).

Unproven Risks

Public concern about environmental cancer risks often focuses on risks for which no carcinogenicity has been proven or on situations where known carcinogen exposures are at such low levels that risks are negligible. For example:

1. Non-ionizing radiation. Electromagnetic radiation at frequencies below ionizing and ultraviolet levels has not been shown to cause cancer. While some epidemiologic studies suggest associations with cancer, others do not, and experimental studies have not yielded reproducible evidence of carcinogenic mechanisms. Low-frequency radiation includes radiowaves, microwaves, and radar, as well as power frequency radiation arising from the electric and magnetic fields associated with electric currents (often called ELF or extremely low-frequency radiation).

2. Pesticides. Many kinds of pesticides (insecticides, herbicides, etc.) are widely used in producing and marketing our food supply. While some of these chemicals cause cancer at high doses in experimental animals, the very low concentrations found in some foods are generally within established safety levels. Environmental pollution by slowly degraded pesticides such as DDT, a result of past agricultural practices, can lead to food chain bioaccumulation and to persistent residues in body fat. Such residues have been suggested as a possible risk factor for breast cancer; concentrations in tissue are low, however, and the evidence is not conclusive.

Continued research regarding pesticide use is essential for maximum food safety, improved food production through alternative pest control methods, and reduced pollution of the environment. At the same time, banning any man-made chemicals with carcinogenic potential (as required for processed foods under the 1958 Delaney Amendment of the Food and Drug Act) is unrealistic, given the very low concentrations involved and the value of pesticides in sustaining our food supply. Scientists and consumer groups stress the important health benefits of a diet which includes many fruits and vegetables in contrast to the minimal risks associated with pesticide residues.

3. Toxic wastes. Toxic wastes in dump sites can threaten