



# Engineering Ethics: The East Ohio Gas Company Explosion

An Online Continuing Education Course for Engineers

**Course Number: ET-2024**

**Credit: 2 Hours / 2 PDH / 2 CPD**

# Engineering Ethics: The East Ohio Gas Company Explosion

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## INTRODUCTION

On Friday, October 24<sup>th</sup>, 1944, a catastrophic event impacted a residential neighborhood located on Cleveland's east side. The devastation from that explosion and the ensuing fire rivaled the destruction experienced by Londoners during the Blitz of World War II. However, unlike an attack from a foreign enemy, this destruction was the result of a "friendly" neighbor's poor judgment and their need for economic growth at the expense of the public. Unlike the air raid warnings the residents of London received prior to an air attack, the residents of Cleveland's East Side did not have any indication of the potential danger lurking next door nor were they prepared for the catastrophe that ensued.



*(Left) Search for survivors after the East Ohio Gas Co. explosions and fire*

*(Right) Search for survivors after an air attack, London Blitz, WW II*

Eyewitness accounts of the cataclysmic explosion and fire describe the impact of this event on the surrounding neighborhood. Mrs. Mervar, a survivor of the catastrophe, said that *“everywhere you looked, every little leaf, every twig branch, telephone wires, everything, was a mass of flames. I was sure we were being bombed.”*

Further accounts from survivors describe in detail the horror of that event. Mrs. Berta Ott of 5472 Lake Court recalled: *“Out of my window I see everything all red right after I hear the big noise. When I open the door the grass was burning in the yard already. So hot was it I didn’t know whether to open the door or not. All the children but Geraldine were at school. We ran out... We run through the field. All was burning. My back was so hot I thought I was myself on fire already. I took so good care of everything. My dog, Tootsie-she was to have puppies-my three cats, my chicken all gone. My poor Tootsie.”*

Mrs. Charles Flickinger of Carry Avenue was just about to plug in her carpet sweeper at 2:40 pm when her world fell apart. *“Suddenly it seemed like the walls turned red. I looked at the windows and the shades were on fire. Just like that! The house filled with smoke. I think “the furnace blew up.” Then I go outside and see fire all around.”*

Miss Marcella Reichard, 16, of Lake Court stated that the first blast knocked a mop out of her hand. When she ran outside, she saw that the grass and the pavement were on fire. She acted quickly. *“I grabbed my mother and my little sister and we knelt and prayed. Mother went out the back way and I told her she would be running right into the flame. I told them to hold their hands over their eyes and run toward the lake. Then we just ran!!”*



*A panoramic view of the neighborhood leveled by the explosions and fire of the East Ohio Gas Company plant at the north end of East 61st Street off St. Clair Avenue.*

Death, injury and destruction from the explosion and fire were of a magnitude not before witnessed on Cleveland’s East Side. One hundred and thirty (130) persons died from the explosion and fire, 61 so badly burned or pulverized that identification proved impossible. Seventy-three (73) of those dead were employees of the East Ohio Gas Company. Two hundred

and twenty-five (225) persons were injured enough to require hospital treatment; twenty-three (23) of those injured were Cleveland firemen called out to deal with the blazing inferno. Seventy-nine (79) houses destroyed, thirty-five (35) houses were partially destroyed and 680 persons were left homeless. Two (2) factories were completely destroyed and 13 factories were partially destroyed resulting in the loss of employment and significant economic loss for many Cleveland residents. Two hundred and seventeen (217) automobiles, 7 trailers and 1 tractor were destroyed. Extensive damage to the property and the facilities owned by Bell Telephone, Cleveland Transit System, NY Central RR, Pennsylvania RR, and Western Union occurred. Infrastructure damage, including damage to the sewer system, domestic water system and significant damage and destruction of the streets themselves surrounding the East Ohio Gas Works occurred as a result of the explosion and fire.

The dollar value of damage (in 1944 dollars) to personal property from the explosion and fire was estimated to be between \$6 million and \$8 million (not including damage to the infrastructure). The cost of all damage to personal and industrial property from the explosion and fire was estimated to be between \$7 million and \$15 million dollars.

### **NY Central and Pennsylvania RR Train Tracks to the North, Lake Erie to the north of the tracks**



East 55th Street to the west..... St. Clair Avenue to the south..... East 63rd Street to the east

*Aerial View of the Impacted Area, East Ohio Gas Company (#2 Works) and Surrounding Neighborhood*

## Course Objectives

This online course will explore, in-depth, the events that culminated in the catastrophic incident that occurred on Cleveland's East Side on October 20th, 1944. That will include a discussion of the following:

- the factors that led to the choices made by the East Ohio Gas Company regarding liquefaction of natural gas
- the inadequate research on the part of the tank fabricator, Pittsburgh-Des Moines Company, regarding tank size, tank configuration, the effects of the steel fabrication and assembly processes on the tank material itself, and the effects of the stored liquefied natural gas on the tank material
- the physical and financial impacts of poor decision-making on the part of the East Ohio Gas Company and Pittsburgh-Des Moines Company to the local community
- changes in natural gas processing and storage that occurred as a direct result of this incident

Foremost, the duties of the Engineer in protecting the safety of the public will be explored and analyzed. The Preamble of the National Society of Professional Engineers (NSPE) Code of Ethics for Engineers states that-

*Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct.*

### **Fundamental Canon #1 of the NSPE states that-**

*“Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health, and welfare of the public.”*

The public good must be held above the interest of any individual or group. Engineers must avoid action or inaction that could endanger the safety, health and welfare of the public. An in-depth view of how that Fundamental Canon was ignored and violated by engineers and design professionals resulting in the East Ohio Gas Company explosion and fire will be examined in this online course. The primary objective of this course is a thorough understanding of that Code of Ethics for Engineers requirement.

## Background Leading to the Incident

### Brief History of the East Ohio Gas Company

The East Ohio Gas Company was an operating public utility engaged in the selling of natural gas for industrial and consumers' use in the city of Cleveland, Ohio and the surrounding area. The facility location for the East Ohio Gas Works, bordered at the time of the incident by East 55<sup>th</sup> Street to the west, East 63<sup>rd</sup> Street to the east, St. Clair Avenue to the south and the railroad tracks for the New York Central and Pennsylvania Railroads to the north, was one of the oldest industrial sites in Cleveland, Ohio. The 10-acre plot of land was originally developed by the Cleveland Gas, Light, & Coke Company in the 19<sup>th</sup> century.

The use of natural gas for industrial and residential purposes began in the 1920's. In the early-20<sup>th</sup> century, natural gas became a part of the energy mix in Cleveland's East Side, flourishing in the East Side neighborhood (located south of Lake Erie) and reaching its peak in the 1950s. The East Ohio Gas Works soon became a major source of natural gas throughout Ohio.

However, in the 1970s, the region was experiencing significant difficulties with the supply of natural gas. The region's supply of natural gas were significantly impacted by the armed forces' reduction in strategic storage capacity and "cold spells" in the region. The East Ohio Gas Company was exploring options for increasing natural gas storage and supply issues with the utility's service area.

### Brief History of the East Side Neighborhood-

Located north of St. Claire Avenue, between the East 30's and the East 70's (streets), Cleveland's mixed-use East Side neighborhood was a comprised of residential, commercial and industrial buildings and businesses. The residential portion of this neighborhood was a predominately Slovenian community comprised mostly of first generation immigrants from Eastern Europe. The center of the Slovenian community was the St. Vitus Catholic Church, located at the corner of East 61st St. and Glass Avenue. The church, built in 1893, was the first Catholic Church in Cleveland for [Slovenes](#). This close-knit, well-established community was very family and church-oriented.

To view the remainder of the course material and to take the quiz for PDH credit, you must purchase the course.

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