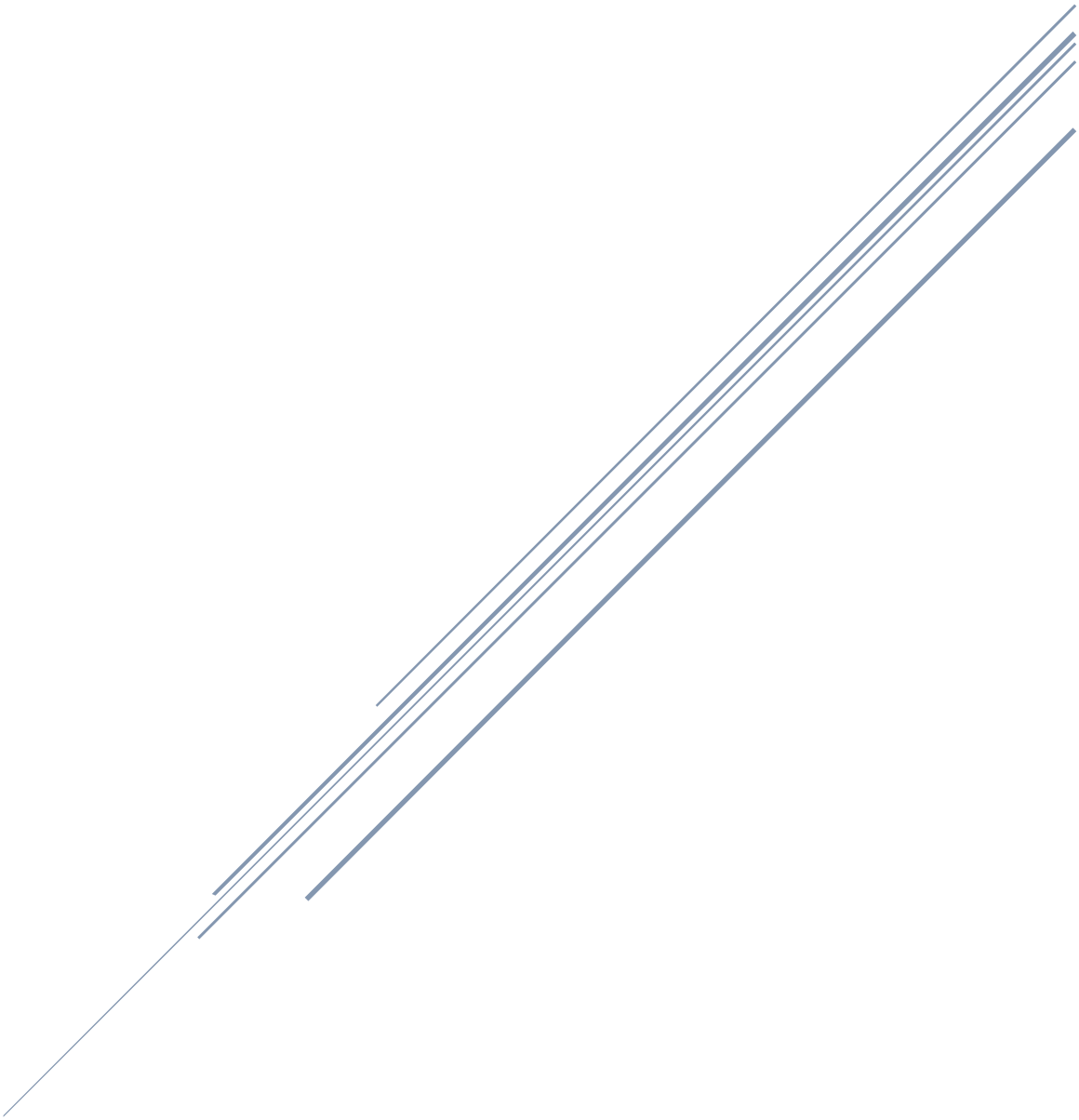
THE CHERNOBYL DISASTER

Pierce Smith



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The city of Chernobyl, located at around 15 kilometers from the Vladimir I. Lenin Nuclear Power Station, is not the closest city to the power plant. That accolade goes to Pripyat, a newer city that is located around 3 kilometers away from the complex.[1] The infamous disaster has been very well disputed, theorized, and investigated. Even today, the United Nations are still unraveling information they had not discovered previously. These Ukrainian cities now sit abandoned. Though, the city of Chernobyl was officially designated a tourist attraction in 2011.[2]

"Considered history's worst nuclear accident, the Chernobyl disaster killed 31 people directly, including 28 workers and firefighters who died of acute radiation poisoning during the cleanup."[3] This occurred in April of 1986. To understand how the incident near Chernobyl and Pripyat happened, one must first have some background knowledge in the origins of nuclear science. The following names and their accomplishments detail this.

The term "radioactivity" was coined by Pierre and Marie Curie, in 1898. Wilhelm Röntgen discovered the existence of "x-rays" and even created the name in 1895. Henri Becquerel accidentally discovered radioactivity in 1896, while further investigating Röntgen's work. The "Curie," "Roentgen," and "Becquerel" are units of measurement used to calculate [radio]activity.

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[1] Lallanilla, Marc. "Chernobyl: Facts About the Nuclear Disaster." livescience.com. https://www.livescience.com/39961-chernobyl.html.

[2] The Nuclear Energy Institute. "Chernobyl Accident and Its Consequences." nei.org. https://www.nei.org/resources/fact-sheets/chernobyl-accident-and-its-consequences.

[3] Greenspan, Jesse. "Chernobyl Timeline: How a Nuclear Accident Escalated to a Historic Disaster." history.com. https://www.history.com/news/chernobyl-disaster-timeline.

Many forms of plutonium and uranium are radioactive. This means they are letting off radiation in the form of mass and/or energy. These particles and/or energy that are released can be quite harmful in large amounts. Therefore, most countries around the globe have set standards for how much radiation one individual can accrue in nuclear facilities per year. "High doses can kill so many cells that tissues and organs are damaged immediately."[4] This was the case for many of the unfortunate individuals that perished in the Chernobyl disaster.

Many questions still surround exactly how, and why, Reactor 4 of the Chernobyl nuclear plant exploded. However, one thing that almost everyone seems to agree on is that a build-up of steam caused the explosion.[5] The World Nuclear Association goes so far as to state that the RMBK reactor design was flawed, as well. These are not the only factors that influenced the accident. For instance, three of the head officials directly overseeing the operation of the Vladimir I. Lenin Nuclear Power Station were sentenced to 10 years in a Soviet labor camp – only a year later! These men were "…found guilty of gross violations of safety regulations, creating conditions that led to an explosion."[6]

Anatoly Dyatlov, basically the man in charge of Reactors 3 & 4 of the complex, displayed gross negligence through his executive actions – including managing his workers. The reading they received from their handheld dosimeter

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[4] U.S. Nuclear Regulatory Commission. "Backgrounder on Biological Effects of Radiation." nrc.gov. https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html.

[5] World Nuclear Association. "Chernobyl Accident 1986." world-nuclear.org. https://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/chernobyl-accident.aspx.

[6] The New York Times (July 30th, 1987). "Chernobyl Officials Are Sentenced to Labor Camp." nytimes.com. https://www.nytimes.com/1987/07/30/world/chernobyl-officials-are-sentenced-to-labor-camp.html.

maxed out at 3.6R/hr. (Roentgen). This itself was alarming. However, they decided to operate according to standard procedure. Finally, they get a military dosimeter that maxes out at 200R/hr. with multiple readings. If 3.6R/hr. was already quite alarming, imagine 200R/hr. Dyatlov completely disregarded what his staff had to say, eventually getting sick himself.[7]

Now, one can determine what kind of steps would be necessary to prevent another one of these unfortunate incidents from occurring. First, finding competent management is an absolute must. Without competent management staff, one could never hope to find competent employees. Second, designing and implementing a better reactor core design would be very beneficial. Third, along with competency among workers, an effective backup plan must be set in place in case there is an emergency – possibly even for standard procedures. The U.S. NRC has even stated similar ways to improve safety.[8]

The Chernobyl disaster was exactly that, a horrific disaster. Thankfully, through the world watching this disaster, newer more effective regulations and safety procedures have been created. The most recent nuclear disaster was a meltdown at a power plant in Fukushima, Japan. Seeing as nuclear science has not been a science until its discovery in the late 1800's, the field has come a long way. Hopefully, these instances of destruction will bring about a much safer environment and those in the field will work smart, safely, and diligently.

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[7] *Chernobyl*. "1:23:45." Directed by Johan Renck. Written by Craig Mazin. Home Box Office. May 6, 2019.

[8] U.S. Nuclear Regulatory Commission. "Backgrounder on Chernobyl Nuclear Power Plant Accident." nrc.gov. https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/chernobyl-bg.html#response.

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