



# EMERGENCY FILM GROUP

NOTE: The following article first appeared in the Fall, 1991 edition of *Dispatch* and has been popular ever since.

## Book Review:

## The Heroes and Villains of the Chernobyl Disaster

### *The Truth About Chernobyl*

By Grigori Medvedev

Translated by Evelyn Rossiter

Forward by Andrei Sakharov

Available through Amazon.com for about \$60.00

By Gordon Massingham

It was a massive explosion- ten times the size of the Hiroshima bomb. It flung into the air 120 Tons of red hot nuclear fuel and more than 100 Tons of reactor graphite. The 500-Ton "biological shield" built over the reactor was hurled into air, crashing back down at an angle, leaving the reactor core exposed- spewing massive amounts of radiation. Flames shot 600 feet into the air. Fires started. Pieces of radioactive material were mashed into the structural debris. Almost 50 Tons of nuclear fuel were evaporated into dust, blown by the wind northwest across the Ukraine, Byelorussia, and the Baltic States.

It was the worst disaster of the still young nuclear age- what has become known as Chernobyl, though the disaster actually occurred near the small village of Pripjat, some ten miles from the larger city of Chernobyl.

The disaster occurred, ironically, while the reactor's safety systems were undergoing a test. Reactor Number 4 of the Lenin Nuclear Power Station was preparing to shut down for scheduled maintenance. The "inertial rundown experiment" was a test that would bypass the reactor's safety systems. The emergency core cooling system was disconnected.

The hot reactor caused a steam discharge so powerful that relief valves were destroyed and water lines ripped apart. The reactor's insulation was breached as well as the leaktight compartment designed to confine an accident. Chemical and exothermic reactions broke water down to its elements- hydrogen and oxygen, a highly explosive mixture. The hydrogen and oxygen bubble began to fill the leaktight compartment and then blew.

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The first responding fire fighters were from the plant fire brigade. The tar roof of the nearby turbine hall, which served all the reactors, was on fire. Lubricants inside the turbine hall were ignited.

Fire fighters quickly climbed to the roof and worked at extinguishing the fires, while their commander sounded a general alarm that would bring fire apparatus and fire fighters from all over the Kiev region. Fifty units responded to the fire and were successful in extinguishing all but the fire in the reactor.

Apparently, the fire fighters did not understand the radiation hazard present. They did not have appropriate protective clothing. One by one they began to experience pressure in the chest, severe coughing, nausea, vomiting, and fainting. At first they thought it was from the smoke and heat of the fire.

They were unaware that they had been walking on radioactive material that was emitting 20,000 roentgens per hour. Doctors found the fire fighters extremely agitated and nervous- suffering from "nuclear frenzy of the nervous system." They had extinguished the fires, but they were burned, many fatally, by the invisible flame of gamma and neutron radiation.

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The operators worked to keep the fire in the turbine hall from spreading to the other reactors, which would have had "scarcely imaginable consequences." Nitrogen was used to purge the hydrogen. Oil was transferred from the turbine hall oil tanks and the tanks flushed with water. Eventually the other reactors were shut down.

But the fire in Reactor 4 continued to defy all attempts at extinguishment. Military helicopters were brought in to fly over the reactor and drop sand on it. Working to the point of exhaustion and being zapped by radiation on every overflight, the pilots flew up to 300 sorties a day, dropping some 5000 Tons of friable material on the reactor. Still the fire burned.

Valves might be opened to drain the water, but this could only be done by divers. Soviet soldiers were offered special inducements to undertake the deadly dive into the radioactive water. If they succeeded in opening the valves their families would be given cars, dachas, apartments, and special benefits. A number volunteered. Miners were put to work tunnelling underneath the compartments. Cement workers poured cement on the radioactive debris.

It is a fascinating, and at the same time, sickening story. The author, Grigori Medvedev, had worked at Chernobyl and was a high ranking nuclear engineer in the Soviet Ministry of Energy at the time of the disaster. He was sent to Chernobyl immediately after the disaster, interviewed participants, many on their death beds, and wrote this compelling report.

However, the book does have shortcomings. Diagrams showing the relationships of the various structures in the plant would help the reader follow the action with better understanding. A discussion of radiation is needed. Terms like roentgens and bers are used throughout the book but with no satisfactory explanation of what they mean. And finally, reports are given of mitigation activities undertaken, but we rarely learn whether the activity succeeded or failed.

However these are relatively minor flaws. The book should be read by anyone who may have to respond to an emergency at a nuclear power plant, or who may live near a nuclear power plant.

The residents of Pripjat and of Chernobyl, ten miles away, were also victims. At every level of management in the

Energy Ministry, the opinion was that panic was worse than radioactivity- so no order was given to evacuate. In the morning, just hours after the explosion, children went to school and played in the radioactive streets. Finally, a day and a half after the explosion, the evacuation was ordered. In the summer of 1986, when Medvedev finished his report, only 28 had died. Their bodies were so radioactive that they had to be buried in lead coffins, the lids soldered shut. But as Medvedev points out, the real tragedy is that "those shattered chromosome strands and those genes, lost or distorted as a result of radiation are already a part of the future."

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If that is the most horrible lesson of Chernobyl, Medvedev's title emphasizes the most important lesson- the need to know the truth about the dangers of nuclear power and radiation. At every level of government in the Soviet Union, the policy was that nuclear power was perfectly safe. Accidents were never reported. The author lists some 21 significant accidents that happened both in the Soviet Union and in the United States since 1951, including Three Mile Island and a 1982 accident at Chernobyl. However, in the Soviet Union only a few high-ranking officials, not the general population and not the personnel who operated the nuclear power plants, knew such things happened. And because they did not know of them, they could not learn from them.

Gordon Massingham writes and directs most [Emergency Film Group](#) productions.

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