

## Questions smolder about NDK explosion, pressure vessel code

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BELVIDERE — The Illinois EPA wants to know the short- and long-term fallout of the NDK plant explosion.

Federal investigators want to know what caused the **Dec. 7 explosion**.

To date, no one has publicly stated responsibility for the accident. However, officials have acknowledged that the building was designed with a feature called “blowout panels,” which give way if an explosion occurs. The frame of the building, officials say, will remain intact.

So if the potential for an explosion existed, why was the plant allowed to be constructed so close to Interstate 90?

More than four weeks ago, the explosion rocked the foundations of homes and businesses. It sent a piece of pipe rocketing through the air, striking and killing a truck driver about 400 feet away at the Belvidere Oasis. And there still are more questions than answers regarding the accident.

The 10-story NDK plant, which once stood as a glistening landmark for northwest-bound motorists entering Belvidere off I-90, now stands as a hollowed, steel-frame eyesore. Company officials have yet to decide whether they will rebuild it.

“We’re not that far along,” acting NDK President Ken Hennessey said. “We’re at the preliminary stages of the investigation. It’s too early to tell what our plans would be.”

On Dec. 23, the Illinois Environmental Protection Agency advised that it is asking the Illinois attorney general’s office to take enforcement action against NDK Crystal “for polluting the soil, air and waters of the state.”

The state EPA said about 800 gallons to 850 gallons of sodium hydroxide solution as well as quartz crystals were released during the explosion. However, the agency suspects that wastewater and process chemicals might have been discharged through the facility’s floor drains.

“We want this to be handled properly, and we want to make sure the air, soil and no waterways were contaminated,” IEPA spokeswoman Maggie Carson said. “Our emergency response team was up there initially, and our Rockford region will be following up. We will be looking for possible soil contamination and runoff.”

### What is known

The 55,000-square-foot building, at 701 Crystal Parkway and U.S. 20, opened in 2003 at a cost of \$12.5 million. It housed NDK Crystal, the manufacturing aspect of the plant, and NDK America Inc. offices. The plant served as the North American headquarters for NDK’s Japan-based parent company, Nihon Dempa Kogyo Co. Ltd.

Inside the building are several 50-foot-tall, 75-ton vessels, in which synthetic quartz crystal is grown. That crystal is used to make frequency-control devices, which NDK then sells to mobile-telephone makers and others for electronic devices.

Officials have determined that a pressurized vessel at the west end of the building exploded. The blast blew off a portion of the plant’s exterior shell.

If one of the vessels were to explode, the building was designed to release exterior panels but still preserve the building’s frame. That design feature operated as planned, Belvidere fire Chief Dave Worrell said.

However, a chunk of steel weighing several tons struck the nearby Grupo Antolin facility and knocked in a wall. Another flying piece of debris, a pipe, struck and killed Ronald Greenfield, 63, of Chesterton, Ind. The truck driver was walking in the parking lot of the Belvidere Oasis when the explosion occurred.

Tollway Commissioner Carl Towns of Rockford called Greenfield’s death an “unfortunate accident.”

Officials from the Illinois Department of Transportation did not return phone calls.

Louis Pukelis, a spokesman for the state fire marshal’s office, said his office signed off on the project.

“The OSFM approved the pressure vessels, but the review of the construction plans and approving the operation would be a local matter.”

Mayor Fred Brereton, who was mayor when NDK opened, expressed little knowledge about the site plans for the plant other than to say: “I suppose they went through the process and met all the codes that would have been required.”

Speaking through a city zoning department secretary, Belvidere's Building and Zoning Enforcement Officer Steve Schabacker said: "No comment."

Belvidere's Planning Director Adam Tegan said a special-use permit was granted to allow NDK to build up to 100 feet high. As for NDK's location, he said: "I think the reason they chose the location was it met the requirements for the amount of acreage, electrical power, and access to an interstate. It's located within an enterprise zone, which includes a property tax rebate through the state and incentives for building materials."

### Common design

Commercial architect Bill Jensen of Jensen and Associates said blowout panels are "very common" in industrial facilities.

"Blowout panel basically means the attachment of the wall is such that if the pressure from an explosion is great enough, the attachments or bolts will break free," he said. "The fact that it did blow out means it worked by design."

Jensen said he is not aware of any building code requirements that state such buildings should be built with a blast zone around them. He also would not say whether it was a good idea to build the plant so close to the tollway.

"That's kind of 20/20 hindsight."

Worrell added: "I'm sure nobody ever expected anything like this to happen when it was built. It was a rare and unusual circumstance that caused this event."

"I'm sure as the investigation goes on, they'll be looking at all those aspects along with recommendations for what direction NDK takes from here."

### Lead investigators

The U.S. Chemical Safety and Hazard Investigation Board, an independent federal agency charged with investigating industrial chemical accidents, has emerged as the lead investigative agency.

The CSB conducts "root cause" investigations of chemical accidents at fixed industrial facilities. The CSB said such accidents usually stem from deficiencies in safety management systems. Other potential causes involve equipment failures, human errors, unforeseen chemical reactions or other hazards.

The CSB does not issue fines or citations, but does make recommendations to plants, regulatory agencies such as the Occupational Safety and Health Administration and the EPA, industry organizations and labor groups.

Less than a month before the NDK explosion, CSB Chairman John Bresland released a video-safety message asking all states and municipalities to adopt the American Society of Mechanical Engineers or ASME Pressure Vessel Code to reduce the number of accidents involving pressure vessel failures. Illinois has adopted ASME Pressure Vessel Code.

"Pressure vessels store tremendous amounts of energy, and you should never become complacent about the risks," he said.

CSB spokeswoman Amy McCormick anticipates that the investigation will be completed within six to 12 months.

Meanwhile, NDK is conducting operations out of temporary offices.

"Shipping and receiving is being handled close to O'Hare Airport, and the administrative side is in a temporary facility," said NDK's Hennessey. "It's going to be a while until some of the sales and administration (activity) occurs out of Belvidere."

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2. Sensationalist news stories are not helpful. How about this for an idea--waiting for results of the investigations BEFORE jumping to conclusions regarding design, location, and other factors.

3. The term 'smolder' primarily refers to a 'fire' There was no fire at NDK--only steam. Bad reference to the first news stories that reported a 'gas line explosion'.

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