

Alpha radiation surprise at Bruce; Bruce Power officials appear before Canadian Nuclear Safety Commission

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OTTAWA - An incident that may have exposed hundreds of workers at Bruce Power to low levels of radiation has revealed an apparent gap in safety procedures at Canadian nuclear facilities.

Bruce Power officials told a public hearing Thursday they did not anticipate or test for airborne alpha radioactivity in one of the reactors being refurbished at the Bruce A nuclear station. They said they're always on the lookout for beta radioactivity, operating on the assumption that protecting against one will protect against the other.

That assumption -- which Canadian Nuclear Safety Commission officials said is a common, industry-wide assumption -- proved false late last year when unanticipated alpha contamination was discovered in the reactor vault where up to 563 people had been working. The company eventually concluded that 195 workers had been sufficiently exposed to warrant testing.

It will be another four months at least before all workers who the company expects may have been exposed know whether their health has been jeopardized.

Almost three months after the elevated levels of alpha radiation were detected during refurbishment of the mothballed Unit 1 reactor, test results have been received on only 14 workers, the company said Thursday.

The levels of alpha exposure to date have all been well below maximum regulatory levels for workplace health.

But Norman Sawyer, chief nuclear officer at the Bruce A Station on Lake Huron, told the CNSC there will be "a level of uncertainty" until all the results are in.

Union spokesman Pat Dillon of Ontario Building Trades told QMI Agency that workers are suffering both "frustration" and anxiety" as they wait.

Samples from each worker must be sent to the Atomic Energy of Canada Ltd. dosimetry laboratory at Chalk River, the only facility licensed for such work in Canada.

Maureen McQueen, radiation protection manager for Bruce Power, said Chalk River can only complete testing on 10 samples per week. Bruce Power has sent about 50 samples so far, with 142 yet to be dispatched to the facility. It will take another 14 weeks to get all the samples in, and four weeks after each is submitted to get results back, McQueen said.

At Thursday's CNSC hearing into the incident, agency inspectors said they've found no evidence that the radiation leaked beyond the reactor vault or endangered the public. Commission member Ronald Barriault suggested Bruce Power was lucky the incident wasn't far more serious.

"It's more by good fortune than by good industrial hygiene management that you don't have a serious problem in the sense of radiation sickness," he said.

Company officials acknowledged they could have done better but contended they took steps that minimized the risk. Barriault conceded the point and withdrew his comment.

The trouble started late last November as workers, using special tools designed to minimize dust, were grinding the pipes that carry coolant to the Unit 1 reactor, which has been shut down for almost 15 years. They'd done the same job on the Unit 2 reactor a month before without incident and assumed the same procedures would be sufficient.

"With hindsight, it would have been prudent to revisit these underlying assumptions," Norman Sawyer, executive vice-president and chief nuclear officer at the Bruce A plant, told the hearing. Sawyer said beta radiation levels in nuclear plants are typically 10,000 times that of alpha levels. Hence, they routinely monitor for beta, even though exposure to alpha particles is actually more dangerous.

However, in this instance they eventually found the ratio of beta to alpha was significantly reduced -- only seven to one -- due to the fact that the reactor had been idle for years and beta decays faster.

"There is a bit of a mindset issue here in that we're looking for the beta and not directly for the alpha," conceded Frank Saunders, vice-president of oversight and regulatory affairs. Compounding the problem, the company could not quickly assess how dangerous the exposure to its workers had been because there is only one accredited facility in Canada -- at Chalk River - that conducts the time-consuming tests.

It intends to test all 195 workers deemed to have been at risk, plus any other workers who ask for it. The company is working with CNSC to find an American lab that could do some of the work. Since the incident, the company has installed alpha air monitoring devices and purchased alpha detection scanners for employees. And it is setting up its own on-site testing facilities. Both CNSC members and Bruce Power officials expressed some mystification at the media interest in the incident.

Murray Elston, the company's vice president of corporate affairs, later insisted Bruce Power acted quickly and responsibly, escalating its protective measures as confirmation of contamination came in.

Still, he acknowledged: "For us, this is a huge event . . . The issue is we've identified we can do better."