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Emergency Planning: The ever-present nuclear threat

Introduction

This year, the government made local authorities that host nuclear power stations formally responsible for devising plans that detail how our emergency services and local councils will respond to a radiological emergency. The plans revolve around a detailed plan for the area immediately around each power station, called the Detailed Emergency Planning Zone (DEPZ). In this zone, the local authorities have to design countermeasures that are triggered by different levels of radiation being released. Beyond this tiny zone – the largest is just 3.3km/2 miles away from the relevant power station – the public will have to rely upon the local authorities to miraculously “extend” the zones, with little extra money or resources. The rest of us are left more or less completely exposed.

At a time when the government is sending out mixed messages about the terrorist threat we all face, Greenpeace have commissioned a report that explores how effective our current nuclear emergency plans would be if the unthinkable ever became a reality. They include scenarios that indicate that our present emergency plans would be overwhelmed alarmingly quickly, putting the safety of all of us in jeopardy. One such scenario is explained in detail below.

Accidents at British nuclear plants are not uncommon, but so far, apart from Windscale, the accidents have been relatively minor and have not required any of the emergency plans to be fully tested. This is the result of luck more than judgement, however, as our scenarios show. Our investigations indicate that when it comes to nuclear safety we have nothing to be complacent about.

Nuclear Power Stations: A Constant Threat

Each power station has storage space for holding the tonnes of fuel that are waiting to be used and fuel that has already been used. When fuel is spent (used up), it is extremely hot and needs to be stored in water for some months to allow it to cool and lose some its high level radioactivity. The spent fuel is made up of a combination of uranium and plutonium, a by-product of the reactor process, and is extremely radioactive.

If just one tonne of this spent fuel was involved in an accident or terrorist incident that caused a fuel storage tank to break open, then the current emergency plan would be rendered ineffective. Such a scenario could result in dangerous levels of high level radiation spreading up to 60km/36 miles in 7 hours and 100 km/60 miles in day. If a release of this kind were to take place at somewhere like Hartlepool power station, just 6 miles from the 89,000 people who live in Hartlepool then the current plans that account for an area of just 0.6 miles around the plant would surely be overwhelmed.

The type of radiation that might escape from a power station would be even more dangerous than the waste inside a nuclear transport because it would not have had the chance to complete the cooling process and lose some of the radiation that is normally very fragile and short lived. If it is released without having any time to cool, then this volatile radiation still exists and is particularly prone to being absorbed by people through the thyroid gland, potentially causing cancer in the future.

Zone Explanations

Zone 1: 1 – 3 km/0 – 2 miles

This is the area immediately around a power station, known as the Detailed Emergency Planning Zone (DEPZ), where local councils are required to draw up plans that will protect the residents living within that area. The plans involve providing one or all of three options. The first is to provide information to the residents on what has occurred and what they should do. The second is to distribute potassium iodate tablets that if taken early can prevent certain types of cancer that are caused by the intake of damaging radiation. If the levels are too dangerous to allow continued exposure to residents, then the local authority must arrange for evacuation for all residents within the DEPZ.

Zone 2: 3 – 10km/2 – 6 miles

This zone contains those people who are most at risk in the event of a nuclear emergency. There is no detailed plan in place to protect them from becoming contaminated. The best on offer is the option of the DEPZ being "extended" to take into account the surrounding area. Exactly how this would be done is not clear at all. To suddenly "extend" this zone up to 10 km/6 miles away from the source of the release would firstly involve the local authority being able to assess the situation, which they would have to do without specialist training and equipment, and also be able to offer the same level of protection to thousands more people. Some councils rely on the operators of the nuclear power stations or groups like the National Radiological Protection Board to carry out this assessment for them, but it is highly likely that this might not be possible, either because communications are down or perhaps the NRPB cannot get to the area quickly enough for their assessment to be effective. In such a circumstance, the councils would be obliged to carry out the assessment themselves.

If an accident were to occur at Hartlepool power station, then this could easily contaminate a 10km/6 mile area around the source of the release. This would then cover the town of Hartlepool itself, a town with a population of 89,000, which would stretch even the most well equipped emergency plan, never mind a plan that only has a DEPZ of 1km,/0.6 miles inside which the only human dwellings are two small businesses.

Zone 3: 10 – 100km/60 miles

Studies commissioned by Greenpeace have revealed that deadly radiation released during a nuclear accident could spread up to 100 km/60 miles away from the site in just 1 day. Exactly how dangerous the radiation would be would depend upon the atmospheric conditions and wind direction at the time of the release, but it is worth remembering that parts of England and Wales are still under government restrictions as a result of the Chernobyl accident in the Ukraine 16 years ago. In this zone you receive no actual assistance in protecting yourself, the most likely advice from your local authorities being to stay inside with the doors and windows closed.

100km/60 miles and beyond

If you live outside any of the zones above, unfortunately you are still not safe. The two scenarios we have described deal with the possibility of a very small release. To put our 1 tonne of radioactive material into context, the accident that took place at Chernobyl involved between 100 and 130 tonnes of material. The consequences of a comparable release occurring in the UK are impossible to calculate. At best, it would mean massively escalating rates of cancer, the contamination of foodstuffs such as dairy produce, which

would therefore have to be avoided, and would cause a mass evacuation from the area surrounding the source of the release. At worst, no one knows.

If the Government decides to go ahead with its recommendation to build more nuclear power stations, the risk of accidents will increase as the number of power stations increase. Nuclear power - and the deadly waste it produces - poses a constant threat to the health and safety of all of us. The best emergency plan is to remove the risk in the first place by phasing out nuclear power for good.