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Abstract

International Atomic Energy Agency (IAEA)

“Current Nuclear Safety Issues”

Introduction

The International Atomic Energy Agency (IAEA) is an independent international organization, closely related to the United Nations system. IAEA is the world's center of cooperation in the nuclear field. The major task of the IAEA is to promote the safe, secure and peaceful use of nuclear sciences and technology. The Board of Governors is, besides the General Conference, one of the two decision-making organs of the IAEA. It generally meets five times a year and it is responsible for most of the actions taken by the IAEA (e.g. recommendations and examinations on accounts, programs, budgets ...).

Nuclear Power in the Global Context

In the past decade nuclear power has seen a renaissance, even despite the worst economic crisis since the Second World War. Currently, 29 countries in the world operate 441 Nuclear Power Plants, accounting for 14 % of the world's total electricity supplies and 5.7 % of total primary energy used worldwide. In the context of growing energy demands to fuel economic growth and development, climate change concerns, and volatile fossil fuel prices, as well as the development of new and safer reactor types, many countries around the globe have expressed a new or renewed interest in nuclear power. Of the 29 countries in September 2010 only 2 were intending to phase out nuclear power opposite to some 13 countries constructing new plants. Additionally, 65 countries not operating nuclear power plants so far were expressing interest in, considering, or actively planning for nuclear power. This comes after a gap of nearly 15 years, during which international markets, energy systems and strategic concerns have evolved. Countries introducing nuclear power now face different conditions than in the past, and are responding to them in new ways.

Nuclear Safety and the IAEA

The IAEA is required by its Statute to promote international cooperation and to establish or adopt "*standards of safety for protection of health and minimization of danger to life and property*". The IAEA safety standards provide a system of fundamental safety principles, safety requirements and safety guides for ensuring safety. They reflect an international consensus on what constitutes a high level of safety for protecting people and the environment from harmful effects of ionizing radiation. However regulating safety stays a national responsibility. In order to promote a global safety regime the IAEA relies in part on various inter-governmental legal instruments, like the Convention on Nuclear Safety (CNS). The CNS is committing participating States operating land-based nuclear power plants to maintain a high level of safety by setting international benchmarks to which States would subscribe. However, the Convention is an incentive instrument. It is not designed to ensure fulfilment of obligations by Parties through control and sanction but is based on their common interest to achieve higher levels of safety which will be developed and promoted through regular meetings of the Parties.

Fukushima Dai-ichi Nuclear Power Plant Crisis

On 11 March 2011 the 9.0 magnitude Tohoku earthquake and tsunami caused a series of fires, equipment failures and releases of radioactive materials at the Fukushima 1 Nuclear Power Plant. At the time of the quake, reactor 4 had been de-fueled while 5 and 6 were in cold shutdown for planned maintenance. The remaining reactors shut down automatically after the earthquake, with emergency generators starting up to run the control electronics and water pumps needed to cool reactors. When the entire plant was flooded with water due to a 14 m high tsunami, the connection to the electrical grid was broken and all cooling was lost. As a result, the reactors overheated which resulted in at least partial core meltdowns in reactors 1, 2 and 3 with hydrogen explosions destroying parts of the buildings housing reactors 1 (12 March 2011), 3 (13 March 2011) and 4 (15 March 2011). Despite being initially shutdown, also reactors 5 and 6 began to overheat. Fuel rods stored in pools in each reactor building began to overheat as water levels in the pools dropped. As a result, radionuclides such as iodine-131 and caesium-137 were released into the atmosphere. The official maximum level of radiation was reported to be 1000 mSv/h on March 16 (with reports in the Wall Street Journal on March 30 that this is the upper limit authorities devices can measure) with total amount of radiation released so far unclear, also, but not only, due to the ongoing crisis. Although the accident in the Fukushima 1 Nuclear Power plant was initially rated at 5 on the International Nuclear Event Scale (INES), on 11 April 2011 the Japanese Nuclear and Industrial Safety Agency (NISA) raised the disaster at Fukushima Daiichi to Level 7 on the INES scale. The only other accident rated this high was the Chernobyl disaster in 1986.

IAEA at Fukushima

Currently, a team of experts from around the world is conducting an International Fact-Finding Mission in Japan. They will visit Tokyo Electric Power Company's (TEPCO) Fukushima Dai-ichi Nuclear Power Station and other locations relevant to the accident and nuclear safety in general. The Mission will conduct its activities from 24 May to 2 June 2011. A mission report will be presented at the June 2011 Ministerial Conference on Nuclear Safety in Vienna. Previously, on 15 March, the Japanese government requested assistance from the IAEA in the areas of environmental monitoring and the effects of radiation on human health, asking for IAEA teams of experts to be sent to Japan to assist local experts. Therefore, a Joint FAO/IAEA Food Safety Assessment Team food safety assessment team was sent, as well as three experts in boiling water reactor technology (completed mission on 6 April 2011), and a marine expert (completed mission on 11 April 2011).