

Acquired Experience in the use of National Radiological Incident Database in Chile Period 2013-2018

Introduction:

Chile has been one of the first countries to integrate the use of the Incident and Illicit Trafficking Database of the International Atomic Energy Agency, ITDB-IAEA. This poster is a study of the descriptive statistical analysis of the National Database of Notifications of Radiological Incidents in Chile, BADNIR.

Goals:

Evaluate the present situation, patterns and trends in the use of BADNIR.

Method:

The data of the forms of Notification of Radiological Incident R2 and R24 of BADNIR-Chile, between the years 2013-2018, were collected. From the descriptive statistical analysis of BADNIR, based on tables and graphs, it will be possible to visualize the current status of the radiological contingencies, and to make a diagnosis of the radiological events that occur in Chile, indicating, especially, what type of materials are reported, including those that are outside regulatory control and radioactive sources that have not yet recovered.

Results:

In the period of the last five years, there were 54 notifications of radiological incidents, broken down into 3, 8, 15, 10, 7 and 11 per year, respectively; the records include the incidents by region, city and commune, if it is an interior country or border, place of occurrence, type of incident, material type of scrap and equipment involved. In particular, we have: Nuclear density meters (91%), Ba-133 density meters (3%), gammagraphy equipment (3%), X-ray equipment (3%); equipment not recovered (61%); cases of radioactive material involved: Cs-137 (29), Am241 (Be) (26), Ba-133 (1), I131 (1), Iridium192 (1), Depleted Uranium (1) and Co-57 (1). The largest number of notifications sent to the ITDB-IAEA was the year 2015, with 11 reports, and the year 2018, with 8 reports; most of the thefts of equipment with radioactive sources occurred during transport, representing 86% of the cases, following from the storage warehouse; the findings occur, mainly, in the public thoroughfare, as a consequence of the campaign of diffusion in the press and television about the danger and risk of lost or lost nuclear or radioactive equipment; the majority of robberies occurred in the Metropolitan Region (57%); most of the findings occur in the Metropolitan Region (67%); of the eleven (11) Unrecovered equipment, nine (9) are from the Metropolitan Region, one (1) from the Coquimbo Region and another (1) from the Los Lagos Region; of the equipment not recovered ten (10) were Nuclear Densimeters that contain radioactive sources of Cs-137 and Am-241; the other type of lost densimeter contains a radioactive source of Ba-133; of the equipment not found, 82% corresponds to the Metropolitan region, corresponding 91% of them Nuclear Densimeters. Since some of the radioactive sources remain active in years, thousands of years and millions of years, their recovery is necessary as soon as possible, in order to remain under regulatory control.

Conclusions:

Ensure the continuity of notifications of radiological incidents, the inspection during transport of equipment with radioactive sources and the judicial investigation to recover the stolen materials, attending to their activity for hundreds, thousands and millions of years, and the institutional coordination between the national authorities competent. Consequently, the prompt recovery of equipment with radioactive sources, as well as the State's control actions, must be strengthened, in order to avoid damage to people, the environment, as a result of possible malicious or malicious use, and to avoid the economic impact that would mean an accident with a radioactive and / or nuclear source, normally of high cost.

Discussion:

The information contained in the National Database of Radiological Incidents gives an account of the national situation, broken down by regions of the country; its analysis allows the identification of trends and common patterns of the loss of regulatory control of radioactive sources and nuclear material. Consequently, it allows to evaluate the threats and weaknesses of the national nuclear security; keep updated the basic threat of the design of the physical security of a nuclear installation (DBT), and is a great support for the development of the commitments acquired with the implementation of the Resolution 1540 of the United Nations.

The analysis shown in this Poster suggests the construction of tables and graphical types such as those presented by the ITDB-IAEA, in order to produce statistics at the national level, and to compare the situations that have occurred between neighboring countries and worldwide. The need for each state to design a database with common items, according to their needs, is made visible. The items in the Database should contain: correlative number of events, date of the event, place, type of source, sealed or open source, Isotope and its

activity, area of the incident, brief summary of the incident; indication of the brand, model, serial number and year of the damaged equipment and its radioactive source, category of the national radioactive source and IAEA; if it was recovered, recovery date, and if the event was informed to the ITDB-IAEA, among others.

State

Chile

Gender

Male

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Track Classification: CC: Information exchange for incidents of nuclear and other radioactive material out of regulatory control