

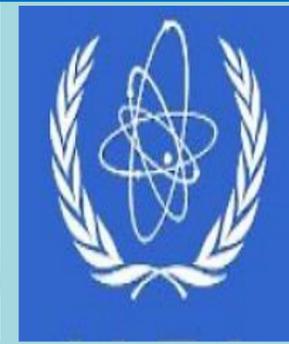
# Results of radiation protection in practices with sources of ionizing radiation in the Petroleum Refining Industry Cienfuegos, Cuba.

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International Conference on Applications of Radiation Science and Technology (ICARST-2017), International Atomic Energy Agency, IAEA, Vienna, Austria 24–28 April 2017

Conference ID: 50814 (CN-249)

Atoms for Peace



In Cuba three oil refineries are installed in different parts of the country, the case in this work is the Cienfuegos refinery located in the south-central Cuba, specifically in the northern margin lobe of the Bay of Cienfuegos region. It occupies an area of 380 hectares.

It was designed to process 65,000 barrels/ day crude oil. Its purpose is oil refining and product manufacturing, purchase, storage, processing, distribution and marketing of oil and petroleum products within the Cuban territory and abroad.

In the Cienfuegos oil refinery various types of sources of ionizing radiation, linked to the following practices are used:

1. Location of interfaces or separation zones fixed level nuclear gauges are used with Cesium sources  $^{137}\text{Cs}$ , for a total of eight sealed sources, which are used in desalination.
2. Fire detection and gas, ionic smoke detectors used with sources of americium-241,  $^{241}\text{Am}$ ,
3. Detection of analytical components, two sulfur analyzers with X-ray tubes.



At the time elapsed they have not reported overdose of occupationally exposed workers, or specialists and workers related to the exercise of practices, nor have reported incidents or radiological events.

The results are based on training and training of occupationally exposed workers and workers linked to practices in the documentation of each and study and exercise plan radiological emergency linked to other key plans like plan emergency in case of fire and disaster reduction plan.

Training continuity by simple elements such as lectures, conferences, videos, business web, and internal magazines to the entity raise awareness and training of workers in confronting possible events and the responsible use of the potential of the exercise of these practices.

One aspect of great interest achieved is the systematic analysis with the fire department and rescue of the actions to take in the combined events of fire and explosion which is involved the presence of some of the sources of ionizing radiation, or natural disasters as the incidence of severe cyclones, with a strong probability of occurrences as meteorological data from previous years.

**The above practices have spent more than 8 years in use with very good results.**

**Radiation protection in the exercise of these was based on the demands and requirements established by law and national legislation in line with the basic rules and guidelines proposed by the IAEA internationally.**

**These results have been achieved in the exercise of these practices by:**

- The high responsibility of the company and its leaders.
- The effectiveness of periodically carrying out the medical check-up of the workers involved demonstrates their physical and mental fitness to perform these functions.
- Compliance with basic radiation protection principles