

## **Recent IAEA Activities On CANDU-PHWR Fuels And Fuel Cycles**

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Pressurized Heavy Water Reactors (PHWR), widely known as CANDU, are in operation in Argentina, Canada, China, India, Pakistan, Republic of Korea and Romania and account for about 6% of the world's nuclear electricity production. The CANDU reactor and its fuel have several unique features, like horizontal calandria and coolant tubes, on-power fuel loading, thin-walled collapsible clad coated with graphite on the inner surface, very high density (>96%TD) natural uranium oxide fuel and amenability to slightly enriched uranium oxide, mixed uranium plutonium oxide (MOX), mixed thorium plutonium oxide, mixed thorium uranium (U-233) oxide and inert matrix fuels.

Several Technical Working Groups (TWG) of IAEA periodically discuss and review CANDU reactors, its fuel and fuel cycle options. These include TWGs on water-cooled nuclear power reactor Fuel Performance and Technology (TWGFPT), on Nuclear Fuel Cycle Options and spent fuel management (TWGNFCO) and on Heavy Water Reactors (TWGHWR). In addition, IAEA-INPRO project also covers Advanced CANDU Reactors (ACR) and DUPIC fuel cycles.

The present paper summarises the Agency's activities in CANDU fuel and fuel cycle, highlighting the progress during the last two years.

In the past we saw HWR and LWR technologies and fuel cycles separate, but nowadays their interaction is obviously growing, and their mutual influence may have a synergetic character if we look at the world nuclear fuel cycle as at an integrated system where the both are important elements in line with fast neutron, gas cooled and other advanced reactors. As an international organization the IAEA considers this challenge and makes concrete steps to tackle it for the benefit of all Member States.