Production Of Radioisotopes For Research, Medicine And Engineering

EurekAlert

There are few people in this world who make their living producing radioactive substances. These isotope producers constitute a small exclusive group of experts in this very specialized area. One might call them a kind of wizards who create invisible, almost massless, but very useful and highly radioactive material out of everyday materials such as water, hydrogen, zinc and iodine.

"These wizards or" target-specialists' are meeting at Risø in these days, where the topic of the workshop, as always, is the development of new methods for the production of radioisotopes. And they all come with one common goal - to work for how we use nuclear physics in everyday life, peacefully, with focus on safety and for the common good, "says Mikael Jensen, who is a Research Specialist and Professor in the Radiation Research Division at Risø DTU.

The radioisotopes have a wide range of applications in medical diagnostics and therapy areas including cancer diagnostics, but are also used in research and development of new technologies. Isotopes are produced by bombarding suitable precursors in a so-called 'target' with fast ions from a particle accelerator; usually a cyclotron.

Rising demand and clinical usefulness
In recent years, the demand for these short-lived radioactive isotopes has increased significantly as a result of the growing use of PET-CT scanning at hospitals worldwide.

"Thanks to the pioneering research donations and political attention, including the national cancer action plans, PET scans are today a common technique in Denmark, with about 20 scanners installed at a number of hospitals in all regions. The production of isotopes takes place in the university hospitals of Copenhagen, Århus, Odense and at Risø Hevesy Laboratory," explains Mikael Jensen who has helped to arrange this year's conference, with the help of several colleagues. And the list of participants is long and over-subscribed this year.

In Denmark, PET scanning with its own isotope production was first established at Rigshospitalet in 1990 and at Aarhus Hospital in 1993. After a decade, focusing on research into neurology, cardiology and physiology, came the big breakthrough for PET scanning for patient diagnostics after the millennium introducing the combined PET and CT scanner.

7 cyclotrons in Denmark
The aforementioned Danish institutions now have a total of seven cyclotrons, and daily deliver tracers for hospitals with PET scanners. At Risø the daily production

starts at 4 am in the morning, so that the isotopes can be at the hospitals when staff show up and patients arrive. In the afternoon the radioactive substances decline in activity, so it is essential that they are used the same day as they are made.

SOURCE [1]

Source URL (retrieved on *06/03/2015 - 3:34am*):
http://www.chem.info/news/2010/07/production-radioisotopes-research-medicine-and-engineering

Links:
[1] http://www.eurekalert.org/pub_releases/2010-07/rnlf-por072610.php