Shipping of Devices from Particle Therapy Sites to IBA Dosimetry Schwarzenbruck

Devices which are irradiated under clinical proton or heavier particle beams will always become activated. The dose rates emitted from these devices can be critical for radiation protection considerations and can reach 1mSv/h or higher immediately after irradiation.

Many of the radionuclides produced have short half-lives (<1h). However, even some weeks after the irradiation, the activities present and/or the dose rates emitted are too high to consider these devices as non-radioactive under the various national regulations. Moreover, the International Regulation for Transportation of Dangerous Goods (ADR) imposes rules for the shipment which need to be observed.

The decision if a device is exempt from special treatment under ADR and national regulations for radiation safety is usually not depending on the dose rate in a given distance from the instruments, but on the activities involved. A determination of these activities usually requires gamma spectrometry and other special analysis methods. Such an instrumentation cannot be expected to be available at particle therapy sites.

Therefore the PT site is advised to follow these rules prior to shipping of the devices:

- Before shipping the device, please allow for 10 days of decay time
- Measure the dose rate at the 5-cm distance from the points where the radiation enters and exits the device, using a scintillator (preferable) or GM survey meter
- Please provide
    - either an estimate of the delivered dose (in MU) in the last year, last month and last week the device was used, and the date of the last use
    - or an estimate of the delivered dose (in MU) each day the device was used

Based on the data provided, IBA Dosimetry can estimate a simplified nuclide vector and tell whether one of the activities/specific activities or the total activity exceeds the limits for free shipment and whether the device can be received by IBA Dosimetry.

Please provide as much information as available and leave blank the fields you have no data on. It is very important to provide an estimate of the dose delivered. Please do not hesitate to add any extra information that might be relevant.

Please scan the form and e-mail it to service@iba-group.com prior to the shipment.

Sending Institution: _____

Address: _____

Country: _____

The sender intends to ship devices to IBA Dosimetry for repair and/or calibration which have been used under proton/ion beams and might be potentially activated.

Type of Device: _____ Weight (kg): _____S/N: _____
(please fill 1 sheet per device)

The device has been irradiated with following particles: _____ Energy range: _____

Dose rate at 5-cm distance from the device: _____ µSv/h measured on (date) _____

measured with _____

Mandatory →

Declaration of consent:

☐ The sender is ready to receive the activated device after repair / calibration.
Note: No additional activation occurs during repair / calibration, but long-living radionuclides created during clinical use will still be present after repair / calibration.

Optional but desired

Estimated dose delivered before shipment (approximate figures):

Either:	Or:
Last year: _____ MU	Date: _____ Dose delivered: _____MU
Last month: _____ MU	Date: _____ Dose delivered: _____MU
Last week: _____ MU	Date: _____ Dose delivered: _____MU
Day of last irradiation: _____	Date: _____ Dose delivered: _____MU
	(please use an extra sheet for further data)

Optional

Known or presumed radionuclides (if information is available) on (date) _____:

_____ activity: _____ kBq, specific activity: _____ Bq/g

_____ activity: _____ kBq, specific activity: _____ Bq/g

_____ activity: _____ kBq, specific activity: _____ Bq/g

_____ activity: _____ kBq, specific activity: _____ Bq/g

Estimated total activity _____ kBq, total specific activity: _____ Bq/g

The sender hereby confirms the correctness of the above statements. He/she explicitly acknowledges that he/she will be responsible for all consequences of incorrect statements in this document, and that IBA dosimetry cannot be made responsible by no means for the legal consequences of incorrect statements.

Name: _____ Function: _____

Place and date: _____ Signature: _____