

An alternative for storage of huge volumes of
radioactive waste water

Filter Systems for Theranostics Nuclear Medicine

Typical challenges for nuclear medicine

New therapies like Lu-177, Ac-225, Tb-161, FAPI, growing number of patients
= more radioactive waste water



Increase of radionuclide **therapies** from 2022 onwards.



Long decay times of isotopes, compared to diagnostics.



Strict(er) release limits for nuclear waste water in many countries.



General concerns medical pollutants in waste water and eco-systems.

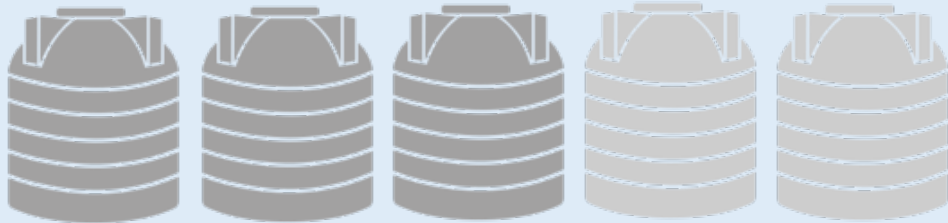
Challenge: excretion of radioactivity via urine – huge volumes

Finding new responsible, safe ways to manage increasing volume of radioactive water

So far, hospitals only had 2 “options” for radioactive waste water:

A

Storage tanks, storing water to decay



- very costly
- consume lot of space
- energy consuming
- difficult to retrofit in existing buildings
- shielding of sewages

B

Doing **nothing**, discharge to sewer



- ... some countries
- polluting the environment
- risks for public health and/ or public affairs

Our solution?

Filter the water at the source:

the patient



Filter systems as add-on or alternative for decay tanks

1. Toilet Filter System



2. FilterBOX





1. Toilet Filter System:



All-in-one solution



Filters > 99.9% of radionuclides



No investment in decay tanks necessary



Enables or increases treatment capacity



Safe and environmental friendly



Easy to install and to maintain
– stand alone, to sewage or to a water buffer tank



Not a medical device



2. FilterBox:



Urine separation(80-90%) in toilet bowl
One or multiple toilets.



Filters up to 99.99% of radionuclides



Add-on for decay tanks. No expansion of decay tanks



Increases treatment capacity



Is safe and environmental friendly



Customization possible

not a medical
device!



How does it work?

Technical insight in the Filter Systems

1. The work process in the hospital : The Toilet Filter System



Work processes in the hospital

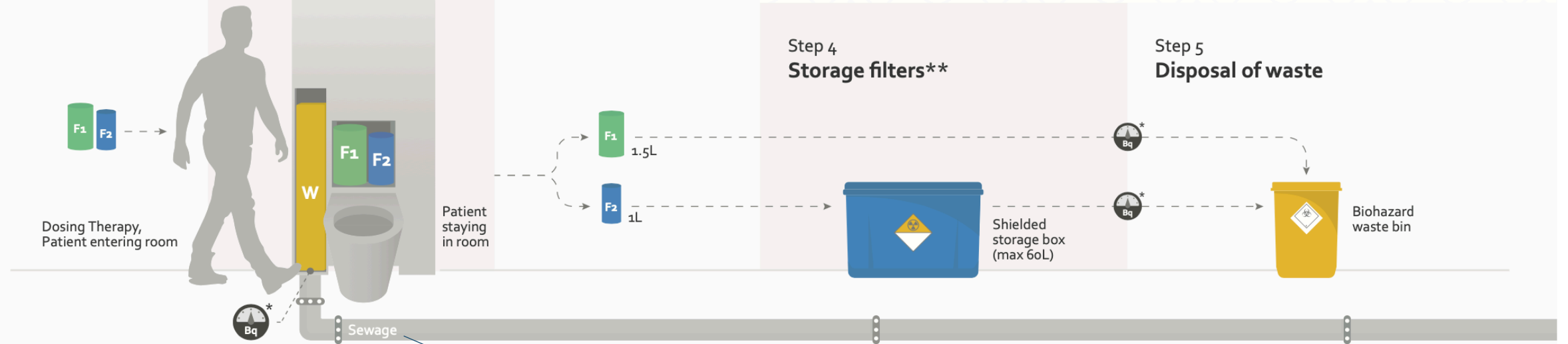
Step 1
Placing filters

Step 2
Using filters

Step 3
Recollecting filters

Step 4
Storage filters**

Step 5
Disposal of waste



Options:

- public sewer
- via decay tanks (increasing capacity)

*Measurement of radioactivity

**Storage time is subject to therapy and country specific release limit/legal framework

1. Replacement of the filters is safe and easy

One filter set per patient (hospitalization) or per day (outpatient up to 4 patients)



Filter 1 feces and toilet paper:

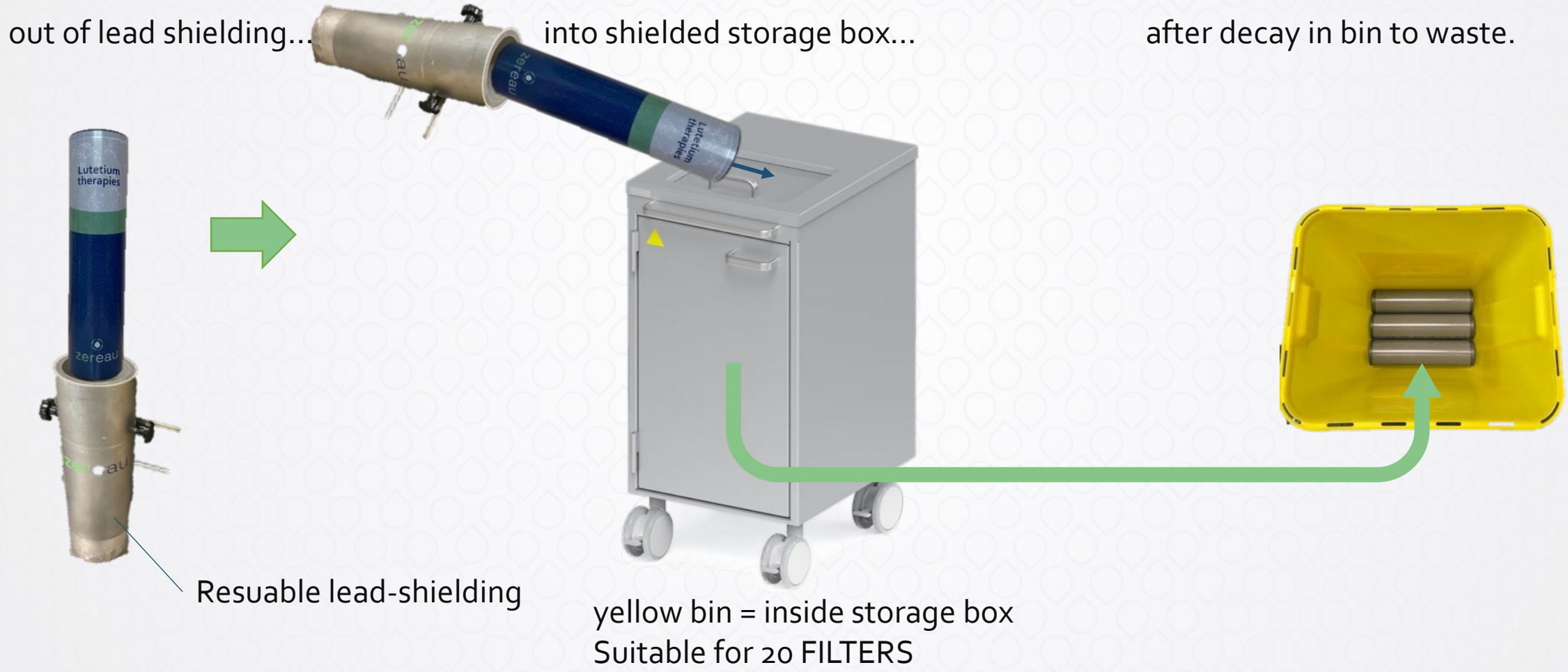
Only relevant for Toilet Filter System



short term storage | disposal

Storage of Filter 2 radionuclides

FilterBOX and Toilet Filter System



Risk management Calculation for workers

Toilet Filter System

Hospitalization:

Total exposure per year - 300 sessions in a 'bad case scenario'*

Take out, transport and store of Lu-177 on a Toilet Filter Systems, 24h hospitalisation, 80% excretion

