

Application of “Non-Radioactive Waste” in TEPCO



*Tokyo Electric Power Company Holdings, Inc.
Radiation Protection and Management Group
Yuya KOMATSU*

- **Background**
- **Safety measures construction in KashiwazakiKariwa-NPP (KK-NPS)**
- **Large transport entrance in KK-NPS**
- **Examination of disposal method of waste materials**
- **What is “Non-Radioactive waste”?**
- **Application of “NR”**
- **Conclusion**



■ '07~'13: Osaka University

➤ BS/MS: Organometallic Chemistry

(Mar. 11 / 2011 Great East Japan Earthquake / Fukushima-Daiichi Accident)

■ '14~: TEPCO

➤ '14~'17: Chemistry Management Dept., Kashiwazaki-Kariwa NPS

➤ '17~'18: Tokyo University, Nuclear Professional School

➤ '18~: Radiation Protection Dept., Tokyo H/Q

Inundation prevention by tsunami: Seawall



In order to prevent flooding due to tsunami, we installed a seawall, about 15m above sea level.

The height of the tsunami, which was assumed to be 3.3m at the maximum in front of the intake of the power plant, is now assumed to be 6.8m*, based on the concept and purpose indicated in the new regulatory standards that took effect in July 2013.

* up to 7.6m when going up

Diversification of water injection and cooling methods:

Fire engines



Fire engines have been deployed as a portable water injection system. Even when there is no power supply, water can be injected into the reactor.

Diversification of power supply: Air-cooled gas turbine generator car (GTG)



Electricity is generated by turning a turbine (impeller) with light oil combustion gas. One set includes a control car and a generator car.

Filtered vent equipment

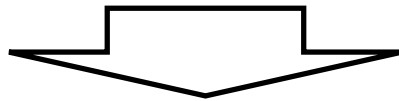


The filter vent facility reduces the amount of radioactive material released during containment vent operation when a serious accident involving the release of radioactive material occurs. In addition to particulate radioactive material, it is possible to remove more than 98% of organic iodine (gaseous radioactive material) by iodine filter. It has the ability to reduce iodine to about 1/1000.

Large transport entrance in KK-NPS(Unit 7)



As a result of evaluating the seismic safety at the large transport entrance of the unit, the prospect of not satisfying the allowable limit was obtained. Therefore, it was decided to improve the earthquake resistance by reconstructing the entrance.



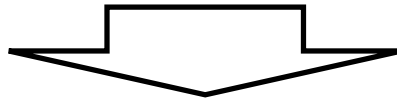
Low-level radioactive waste?

Examination of disposal method of waste materials **TEPCO**

Amount of waste material generated by rebuilding: 2,000 tons
About 1,900 tons of reinforced concrete, about 40 tons of steel frames



Because the building has RCA, when waste materials are disposed as radioactive solid waste, it is equivalent to about 4,100 drums(200L)



Using the “Non-Radioactive Waste (NR)” system, we considered a method of disposing most of it as ordinary industrial waste.

What is “Non-Radioactive waste”?

【Purpose】


Effective use of waste that does not need to be radioactive waste

(Contribution to a recycling society)*

= Reduction of radioactive waste (drums)

- History management (it is necessary to prove by radiation control records that there was no contamination)
- Improving the reliability of the absence of contamination by “measurements and evaluation just in case”
- If contaminated materials can be identified and separated, the rest can be treated as NR.

What is “Non-Radioactive waste”?

High level radioactive waste		Geological disposal
Low level radioactive waste	Waste with a relatively high level of radioactivity	L1: depth disposal
	Waste with a relatively low level of radioactivity	L2: shallow underground pit disposal
	Waste with a extremely low level of radioactivity	L3: Shallow trench disposal
	 Waste that do not need to be treated as radioactive materials (those below the Clearance Level)	Reuse or dispose as general industrial waste

Non-Radioactive waste	Reuse or dispose as general industrial waste
------------------------------	--

Application of “NR”

Asbestos removal
inside the building



NR judgement,
Measurement just in case



RCA setting change



Building dismantling

Body surface
including asbestos
↓
Radioactive waste

Concrete / steel frame
after surface removal
↓
Industrial waste
disposal as NR

Finish coating material
(2 mm)
Asbestos base material
(2 mm)

Before work

Machine removal
(Disc grinder)

Manual removal
(scraper)



Removing asbestos was very hard due to large area size

【for surface asbestos removal】

170 scaffolding plates

400 scaffolding pipes

1200 clamps

Application of “NR”

- Asbestos mask in addition to the equipment for RCA.
- Asbestos were scattering in the building due to stripping the surface with a disc grinder.
- Where the disc grinder does not reach was done manually with a scraper.



scraper



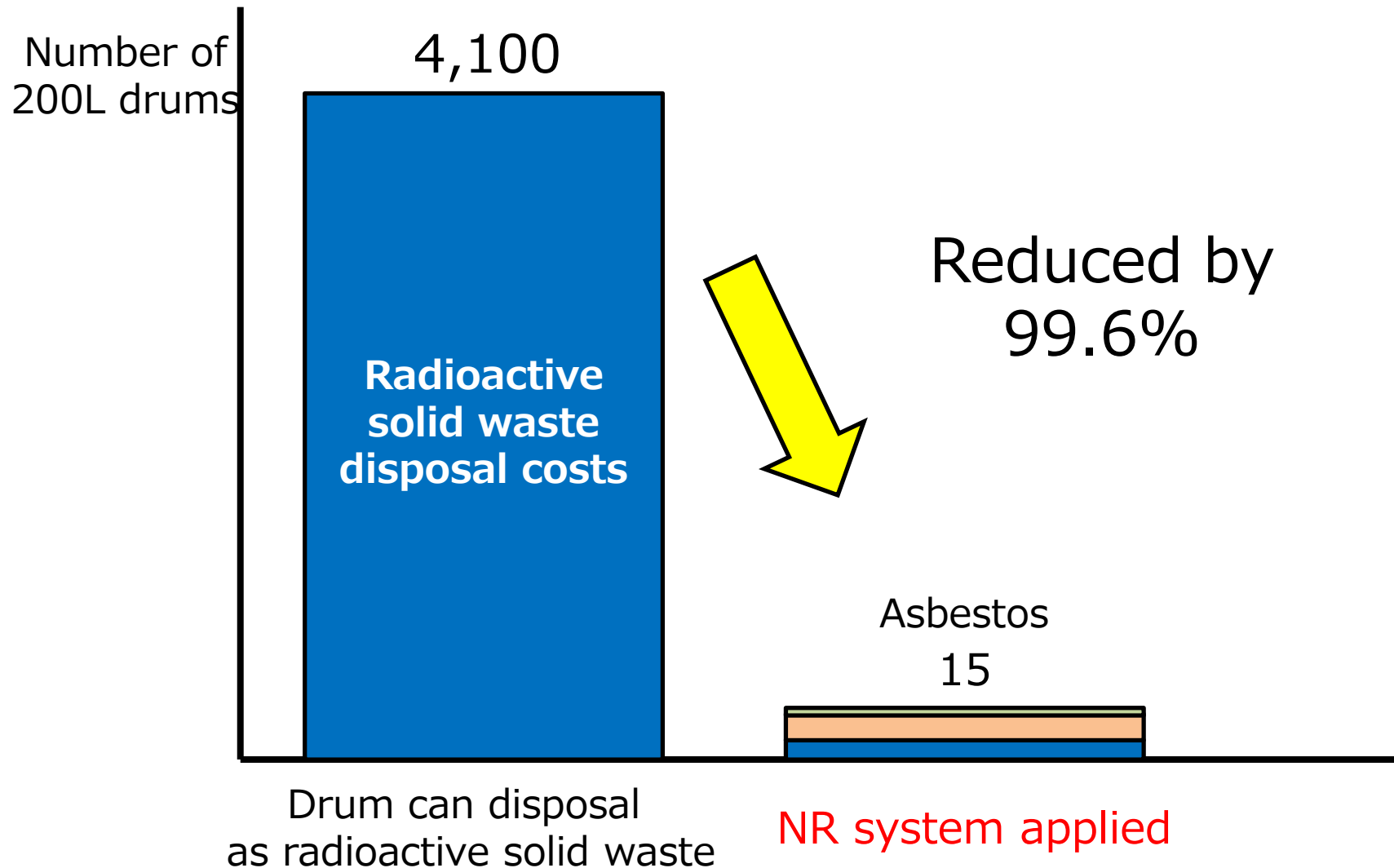
portable radioactivity
removal equipment



disc grinder with a suction device

- NR judgment based on radiation management records such as monthly survey records.
- In order to further improve the reliability of NR, we conducted a measurement and evaluation by sampling for “measurement and evaluation just in case”.
- All the measurement points were confirmed to be less than the detection limit of the theoretical detection limit curve.

Application of “NR”



- **Due to the large amount of radioactive waste, we considered and decided applying the NR system for large transport entrance.**
- **It was a complex work due to asbestos waste.**
- **After the NR judgment by records and the measurement and evaluation just in case, we could treat the waste as general industrial waste.**
- **TEPCO will continue to increase the application of NR system to reduce radioactive waste and contribute to a recycling society.**

Thank you for your attention!