

Promotion of ALARA using compton camera

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Tohoku Electric Power Co.Inc

Contents

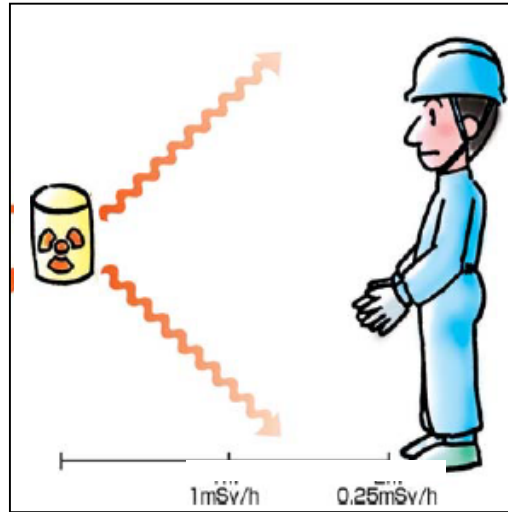
1. Introduction
2. Purpose
3. Method
4. Results
5. Consideration
6. Future works

1.Introduction (1/2)

“ALARA” is the most important concept when using radiation safety.



Shielding



Take the distance



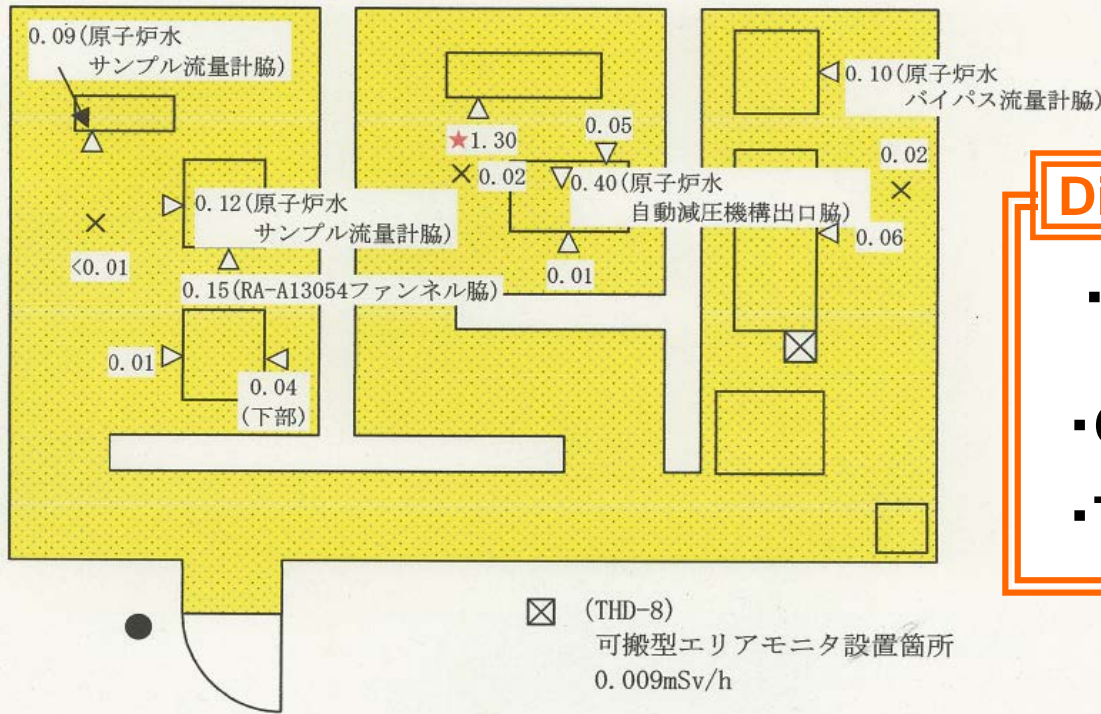
Time - saving

Finally, the most ideal situation is...

All workers know where the high dose points are.

1.Introduction (2/2)

Current dose map



Disadvantage

- Measurement points are unclear(2D)
- Characters are small
- Too monotonic

We'd post more impressionable information !

2.Purpose

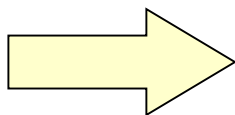
By posting the more impressive image . . .

①: Improve consciousness of workers to reduce radiation exposure.

②: To make it easier to take exposure reduction measures.

3. Method (1/2)

How do we take it ??



We choice the “compton camera”



Made by CHIYODA TECHNOL

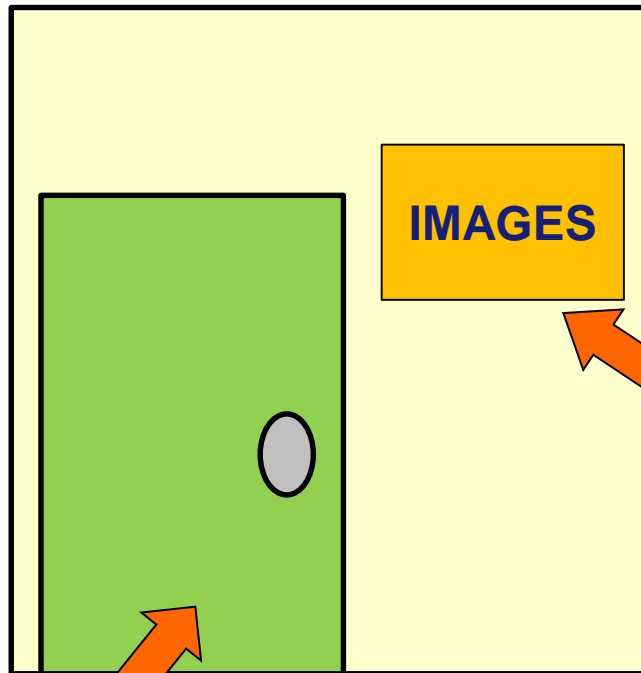
Advantage

- Measurement point is clear
- Color image
- Easy to operate
(Wait 2 to 5 minutes with 1click)

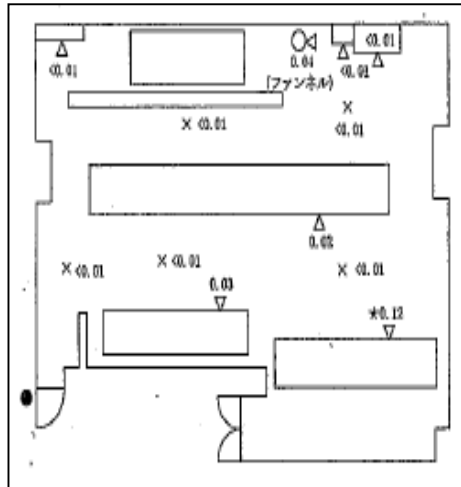
Disadvantage

- Measurement point is limited
- Power supply
- Evaluation is relative

3. Method (2/2)



Entrance of the workplace



&

**Radiation
Visualization
Image**

- ①: We take the radiation visualization image and post them near the workplace.
- ②: We investigate the opinion of the site.

4. Results (1/2)

Actual image

ガンマキャッチャー撮影結果

環境・燃料部／放射線管理G

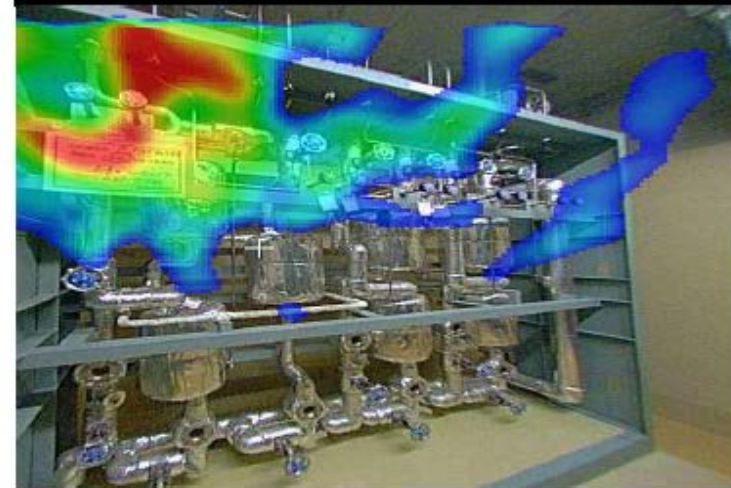
Place :

Date : 平成29年12月5日 (火)

Normal image



Radiation visualization image



【線量当量率】

surface dose equivalent rate(at red part) : 1.30 mSv/h (最大値)

space dose equivalent rate : 0.02 mSv/h



By combining with other measuring instruments, we show concretet values of high dose point in relative indication.

4. Results (2/2)

Example of worker's opinions

- High dose points are **very easy to understand.**
- I want you to post them in more places.
- I was able to consciously **try not to approach the high dose points.**
- I want you to lend the equipment before work.

etc

5. Consideration

- Radiation visualization image was intuitive and impressive.
- It was found that **the image definitely improved the consciousness** for the reduction of exposure.
- **It is difficult to quantitatively evaluate** the effect of radiation reduction unless it is a work of similar conditions in the past.

6. Future works

- We are considering a system for more effective use of information from Compton camera

Who will take the picture?

Only pass the image?

How do we extract the work?

Lecture & lend camera?

Can we secure personnel?

Thank you for your attention !!