

Asia Pacific sanitation workshop

The Great East Japan Earthquake: Sanitation and Toilet Issues

NPO Japan Toilet Labo.

Chairman

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Agenda

- Part 1 Damages
- Part 2 Breakdown of toilet systems
- Part 3 Securing toilets in the area
- Part 4 Environmental hygiene for temporary toilets
- Part 5 Sewage system damages from the tsunami, and recovery
- Part 6 Challenges - temporary toilets and temporary housing
- Part 7 Future tasks to improve sanitation and toilets in disasters

Areas visited



Part 1

Damages

1. Summary of the earthquake

1. Date: 11 March 2011 at 14:46
2. Hypocenter: 130km off the Pacific coast of Tohoku region, 24km depth
3. Area affected: Tohoku and Kanto region
4. Magnitude: 9.0 - the largest in Japan and the 4th largest in the world - Chile, Alaska and Sumatra
5. Casualties: 20,000 and over
6. Destroyed housing: About 500,000
– quake, tsunami and fire

2. Damage situation

1. Many cities on the Pacific coast suffered serious damage not from the quake but from the tsunami.

2. The size of tsunami were
10-40m height. These tsunami
destroyed barriers and reached
5km inside from the seashore.

3. The damaged coast area used to have many industries such as fishing, seafood processing, steel, paper, and agricultural industry. Facilities of these industries were heavily damaged.

3. The damages from the tsunami

Areas and dates I visited:

1. Ohtsuchi town, Iwate – 3 April
2. Rikuzentakada city, Iwate – 4 April
3. Ishinomaki city, Miyagi – 19 May
4. Watari town, Miyagi -- 11 June























Part 2

Breakdown of toilet systems

Damages on sanitation

1. Sewage systems, including sewage pipe, sewage treatment facility and pumping station, suffered complete damage from the tsunami.

2. Johkasou and night soil treatment facility located upland sustained less damage.
3. Substitutes for flush toilets were required due to cut off of water supply and break down of the sewage systems and johkasou.

Damages on sanitation

--the following photos show--

1. Many citizens evacuated to schools and community centers
2. Toilets at evacuation centers became unusable due to cut off of water supply and tsunami mud

3. Used toilet paper go to a plastic bag and excreta wrapped up by newspaper go to a box

4. Public toilets were also damaged by tsunami and were not be able to be used





トイレは
仮設トイレを
ご利用ください。



このトイレは使用できません。
仮設トイレをご利用ください。

使用禁止







使用後、大便後から
扉を閉め、約10秒間
に自動洗浄します。
(洗剤は全自動洗浄機で洗います)

Part 3

Securing toilets in the damaged area

Substitute for flush toilet

1. Set a portable toilet covering a existing squat style toilet so that the disabled and elderly person can use. Temporary toilets were available only in squat style.
2. Place a portable toilet seat on a squat style toilet. Used portable toilet go to a cardboard box

3. Make a hole in the ground and set a handmade toilet. Temporary toilets were installed later on.

4. Housings located upland which was not damaged by the tsunami also see troubles on their flush toilets with johkasou.





大便すて箱
すてたらフタを
しめて。









Urayasu suffered quakes not tsunami

⇒ The city is a satellite town of Tokyo and famous for Disneyland

⇒ Lifeline of the city were heavily damaged by the quake of magnitude 7

⇒ The damage on water and sewage system made flush toilets unusable

Damages in Urayasu

1. Liquefaction phenomenon due to the quake
2. Mud sweeping by a honey truck
3. Temporary toilet (squat style) and temporary water supply
4. Sectional temporary toilet
5. Temporary toilet for disaster











家庭の排便袋(ビニール)は
捨てないで下さい。
バキュームが詰まり、支障が
このまま続いたら
トイレの衛生法につながります!

トイレ
箱の

突然の災害
気がつく
トイレで

使用後は必ず
を矢印の



Part 4

Importance of environmental hygiene on temporary toilets

Environmental hygiene

1. Temporary toilets and collapsing proof
2. Antisepsis, securing water and hand-washing
3. Cleaning, protection from infection and odor treatment



レンタルトイレ

強風の為

使用禁止

倒れる危険あり

注意を付けて

下さい

強風の為

使用禁止

倒れる危険^性

あるのできをつけて

下さい















Part 5

Sewage system damages
from the tsunami, and
recovery

1. The tsunami caused catastrophic damage on town centers of coast cities and their sewage systems.
2. Domestic effluent and sewage run into the sewage system
3. Sewage water from the sewage treatment facility is released to the ocean after chemical treatment











Part 6

Challenges regarding temporary toilets and temporary housing

1. Sewage systems were heavily damaged, and temporary johkasou and vault toilets are mainly used as night soil treatment.

2. The temporary johkasou is the main night soil treatment facilities for temporary housings.

3. Recovery of sewage systems have to be waited until when a recovery program of the area is completed by local/central government.







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Part 7

Future tasks
to improve sanitation and
toilets in disasters

Future tasks

1. Establish protocols for toilets in disasters, which should correspond to timeline and recovery of lifeline
2. Focus on human resource development e.g. a qualification system for coordinators of toilets in disasters

3. Prepare countermeasure manual for toilets in disasters , which should includes above 1 and 2

4. Develop and diffuse toilets for disaster independent from infrastructure

***Thank you
for your attention !***