



ISAP 2020

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Waste Management in response to COVID-19: Exploring ways of response and recovery

INDONESIA CASE

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Outline:

- *Sources of (solid) waste during Covid-19 pandemic*
- *Situation of municipal solid waste management*
- *Some local government response to MSW handling*
- *Situation of medical waste management*
- *Facilities available in medical waste handling*
- *Challenges in waste management*

SOURCES OF (SOLID) WASTE DURING THE COVID-19 PANDEMIC

Municipal solid waste (MSW):

- a. household waste: *regulated by Law # 18/2008 and by Government Regulation # 81/2012*
- b. non-household waste: *regulated by Law # 18/2008 and by Government Regulation # 81/2012*
- c. waste specific included MSW from household containing hazardous waste (included medical waste): *regulated by Law # 18/2008 and by Government Regulation # 27/2020*

MSW during Covid-19 pandemic:

- a. household waste: *separation of mask waste*
- b. household waste (under surveillance): *special care at some cities*

Medical waste (included infectious waste):

- *Regulated by Law #32/2009*
- *Government Regulation # 101/2014*
- *MoEF regulation # 56/2015*

Healthcare facilities that existed before the Covid-19 pandemic (hospitals, clinics, community health, Private doctor's clinic)

Medical waste (included infectious waste) during Covid-19 pandemic:

1. Referral hospital for Covid-19 patients
2. Special facilities (other than hospitals) for Covid-19 patients (for example: Athlete's homestay in Jakarta)

THE FIRST GUIDE DEALING WITH WASTE HANDLING DURING COVID-19

Ministry of Environment
and Forestry - Indonesia
SE.2/MenLHK/2020
March 3, 2020

- *Municipal solid waste workers: very vulnerable to exposure to viruses*
- *Before Covid 19, the use of PPEs in handling waste: not been seriously implemented*

Infectious waste from
health care facilities



infectious waste packaging



waste from people
(household) under surveillance



PPE: masker, glove,
protective clothing

waste from household



Masker

**Manage according to MEF Ministry
No P56/2015:**

- closed with yellow packaging
- keep a maximum of 2 days
- destroy in an incinerator at minimum temperature of 850°C, or autoclave with a shredder

Waste handling:

- disinfection
- cut so as not to be reused
- box closed
- collected by the crew, brought to the collecting transfer

Household waste handling:

- use multi-use masks (to reduce waste)
- cut so as not to be reused
- pack separately with other waste
- waste collectors must use PPE, and it is prohibited to open the package

Solid waste workers: very vulnerable to exposure to viruses



(Photo: PD Kebersihan)

Waste worker in Bandung City:
*We are still working for you
You should stay at home for us*

- Some cities anticipated the Covid-19 waste for its MSW collection workers by tightening the use of PPEs. They provide hand washing soap and hand sanitizer in certain places (example: Jakarta and Bandung city)
- However: estimated around 300,000 waste workers in Indonesia who work routinely in waste collecting and transporting. Not include informal workers such as waste scavengers who are estimated to reach 600 thousand people (*Greeneration, 2020*).
- Although the MEF has issued the special guidance, many Local Governments have not responded properly to the circular. The main problem is the limited budget. Some NGOs have been raising funds for the procurement of PPEs for waste workers.

Special case at Jakarta for MSW (not MW) practices during Covid-19

MSW Households



RUMAH TANGGA

Limbah infeksius masker bekas/sarung tangan/hazmat dari warga



Transfer container
sub-district for masker



City container

Incineration plant
at Landfill
Bantargebang



Third party
Medical waste
treatment



- Simple washing tank near the waste container in community
- Special container for mask-waste from households not infected by Covid-19
- Special attention to the waste workers: to wear their routine protective equipment, plus mask
- Waste collected sent to third party
- Jakarta also cooperated with the pilot WtE incinerator located in Bantargebang landfill area as emergency waste treatment.

Source: Andono Warih, Webinar 28/04/2020

Special case at Jakarta during Covid-19 for suspect infectious waste from households



42 units box-motorcycle
5 box-trucks for infectious waste



51 Transfer points for infectious
waste in 6 sub-districts



Cooperation with third party in
medical waste treatment

March - April, 2020:
waste collected was
131.204 kg,
a majority was mask
waste.



Source: Andono Warih, Webinar 28/04/2020

Special case: trend in waste generation during Covid-19

Lock-down protocol: stay at home, closing of public-commercial areas, etc.

MEDICAL WASTE (MW)

National data of medical waste (*off site incinerators*):

- PPEs waste (Jan 2020) = 68 kg
→ 500 kg (March 2020)
- Medical waste (Jan 2020) = 2,682 kg
→ 4,000 kg (March 2020)
- Asha from incineration (Jan 2020) = 372 kg
→ 585 kg (March 2020)

Data from a West Java private company:

- January 2020 = 10,903 ton
- March 2020 = 11,646 ton
- April 2020 = 14,606 ton (increase at 1,25)

Other data:

- Yogyakarta: decreasing in 14.51%
- Semarang: decreasing at 4.85%
- Surabaya: increasing at 19.61%

MUNICIPAL SOLID WASTE (MSW)

Decreasing of total domestic waste:



- Bandung city 18%
- Jakarta city 24%
- Bekasi city: 44%

Decreasing of MSW:

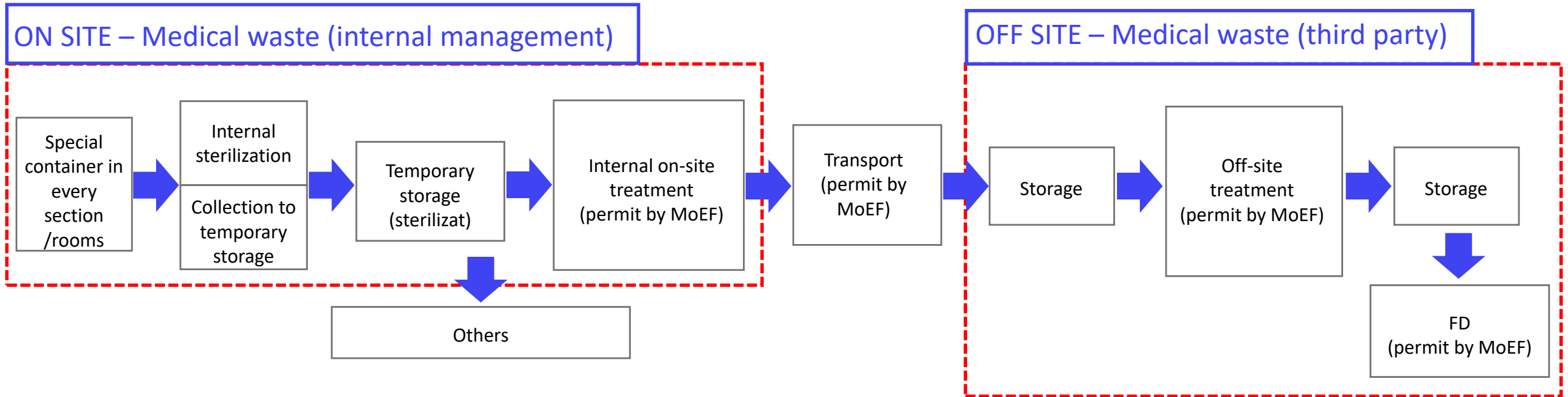
- From commercial area: Bandung (60%)
- From street and public areas: Bandung 8%



- Increasing of domestic waste from HH (Bandung 20%)
- Increasing of plastic waste from HH

Waste masks from HH have no effect on the waste generation

MEDICAL WASTE HANDLING SCHEME



MoEF = Ministry of Environment and Forestry
FD = final disposal (landfill)

Guidance for MW handling for
Reference Hospital, Emergency Hospital,
and Central Community Health
that handling **Covid19** patients



Ministry of Health, 2020

Guidance for Medical Waste handling

26 items, among others:

- plastic sacs for solid waste
- transfer point at facility
- symbol and label
- transported in 24 hours
- data log
- PPE equipments
- Sterilization procedure
- special transportation
- cold storage
- autoclave, microwave and incineration process
- ash handling
- burying of infectious waste

HEALTH FACILITIES AND ITS MEDICAL WASTE

- Hospital (**2,889**)
- Hospitals for Covid-19 patients (**146**)
- Health Community Center (**10,062**): every sub-regency
- Clinic (**8,841**)

- Private company for MW treatment (**15** in 7 provinces)
- Private company for transporter of MW (**140**)
- Permitted incinerator in general hospitals (**110** units)
- Permitted incinerator in Covid-19 hospitals (**20** units)

Others: Pharmacy (26,418), Health Laboratory, Blood transfer unit, Optical, Medicine related to legal aspect, Traditional health facility, Private doctor's clinic

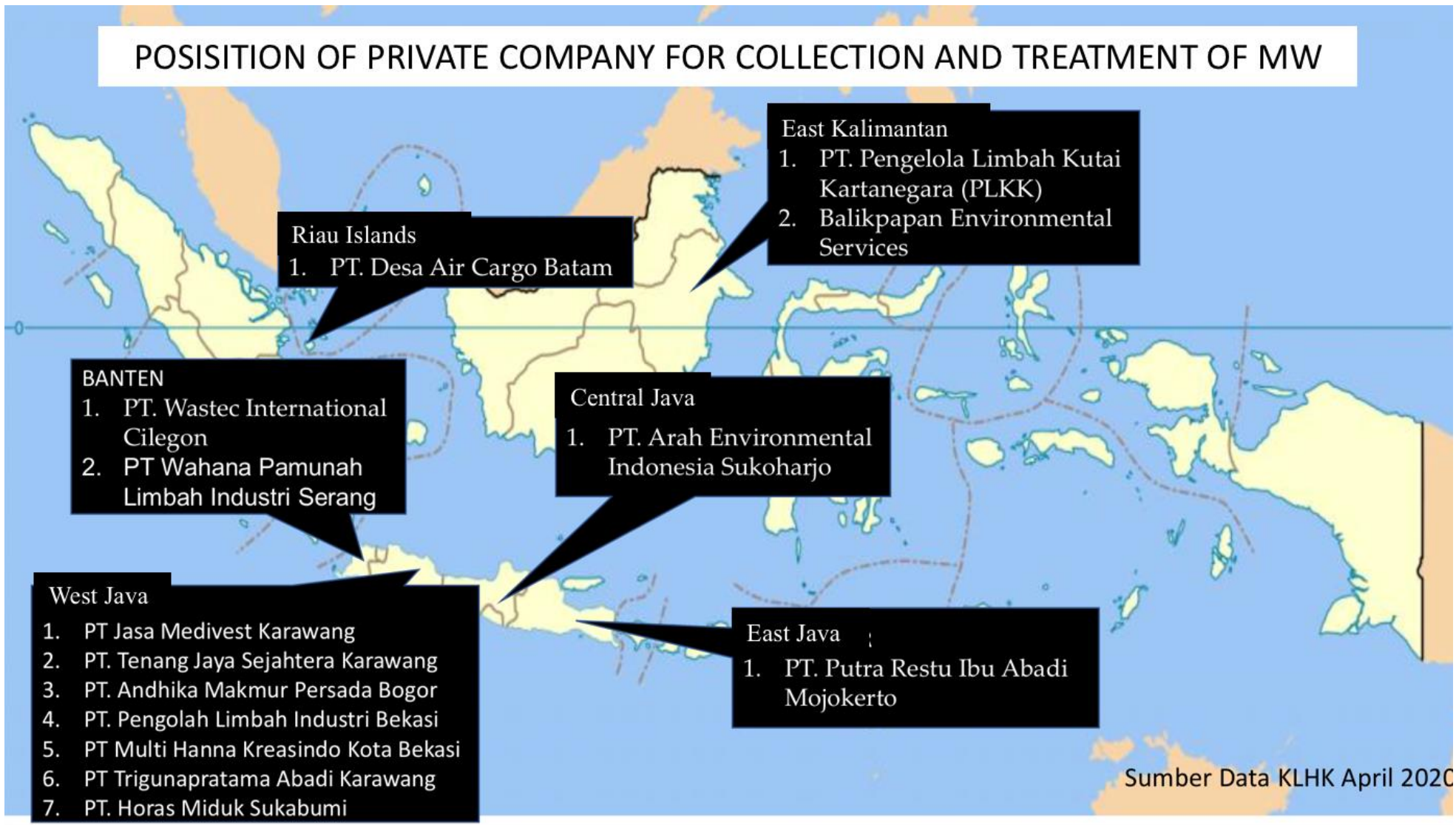
Treatment capacity in **on** and **off** location

- a. Medical waste generation in 2019 = **294** tpd
- b. Permitted treatment capacity of private company = **244** tpd
- c. Treatment capacity of incinerator belongs to hospitals = **70** tpd
- d. Total existing capacity = **314** tpd
- e. Estimated waste generation during covid pandemic = **382** tpd

Problem faced:

- *Lack of capacity (e) - (d) = 68 tonne/day*
- *the distribution of waste processing facilities and transporters is uneven*

Source: 1. Imran A. Nurali, Webinar 24-4-2020
2. Sinta Saptarina Soemiarno, Webinar 28/04/2020



The location of the facility is not evenly distributed (7 of 34 provinces)

Some Central Government programs to solve the problems

1. *Encouraging every hospital to provide the individual autoclave*
2. *Encouraging the cooperation between hospitals in the same area*
3. *Practicing of the burial-dumping processes for infectious waste in accordance with MoEF # 56/2015 under control of Environmental Division in each Local Governments*
4. *Allowing the un-permitted incinerators in the hospitals to operate*
5. *Maximizing the existing permitted incinerator (up to 100% capacity = 70 tpd)*
6. *Maximizing the existing permitted-licensed private company (up to 100% capacity = 679 tpd) → assuming the transportation of the medical waste is running normally*
7. *Cooperating with kiln cement industries to treat the waste in respective areas*
8. *Development of medical waste management in 32 locations during 2020-2024*

Lesson learnt from Pandemic Covid-19 in waste management

- The daily waste services should not be disturbed, which will worsen the public health condition. There is a growing awareness that waste workers are at high risk of being exposed to the virus. There needs to be a joint awareness to pay more attention to waste workers in maintaining their health and safety.
- The processing capacity of medical waste is actually close to the predicted needs. However, Indonesia needs to strive so that the distribution of waste processing facilities is evenly distributed throughout Indonesia.



Photo: Ministry of Health

Waste workers at a special facilities (Jakarta athlete's homestay) for Covid-19 patients

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THANK YOU