

DUE DILIGENCE ON THE PHILIPPINE COVID-19 IMMUNIZATION WASTE MANAGEMENT PLAN AND ARRANGEMENTS (UPDATE FROM HEAL2)

I. BACKGROUND

1. The Second Health System Enhancement to Address and Limit COVID-19 (HEAL2) supports the procurement of safe and effective vaccine against the coronavirus disease (COVID-19) through the Asia Pacific Vaccine Access Facility (APVAX) in consonance with ADB's eligibility criteria. HEAL2 supplements the initial support of the ADB to the government's COVID-19 response under HEAL1. HEAL2 is assisting the government in implementing the National COVID-19 Vaccine Roadmap and the Philippines National Deployment and Vaccination Plan (PNDVP) for COVID-19 Vaccines. The ADB loan for HEAL2 amounting to \$400 million was approved on 25 March 2021 with co-financing counterpart from the Asian Infrastructure Investment Bank (AIIB) of another \$300 million.
2. The government estimates a total cost of \$3,220.7 million (₱154.8 billion) for its national vaccination program from 2021 to 2023; of which, \$3,111.4 million or 90.5% will be spent for the procurement of vaccines, while the remaining for non-vaccine expenditure items, e.g., logistics, vaccine campaign, risk communications, monitoring and evaluation.
3. As of 30 September 2021, HEAL2 helped secure 76 million doses and delivered 34.29 million doses of COVID-19 vaccines. A total amount of \$629.1 million has been awarded, while \$464.9 million has been disbursed out of the combined ADB/AIIB loan.
4. Due to the emergence of more virulent variants of the virus which is resulting to rising new COVID-19 cases, the government has requested an additional financing of \$250 million each from the ADB and AIIB for the financing of vaccines for the first quarter of 2022 that may include booster vaccines.
5. The distribution and use of new vaccines generate increased amounts of hazardous health care waste (HCW) at the point of use (i.e., vaccination sites, local health centers and hospitals). This sudden increase in hazardous HCW could temporarily overwhelm existing HCW management systems. Poor management of HCW potentially exposes health care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks polluting the environment. The COVID-19 vaccination campaign results in the generation of sharps waste (such as used needles and syringes) and pharmaceutical waste (such as used vials, damaged/expired vaccines, and PPE including gloves and masks) as per the hazardous HCW definition under Department of Environment and Natural Resources Administrative Order (DAO) 2013-22.¹
6. This report is an update of the due diligence on the COVID-19 immunization waste management of the country, first prepared in February 2021.² The report documents the Government of the Philippines' legal and regulatory framework and recent policies and regulations on healthcare waste management that have been issued by the DOH and the Department of

¹ From 24 June 2021 to 16 September 2021, the contracted third-party service provider (IWMI Inc.) has collected and treated 54 tons of COVID-19 immunization wastes coming from CHDs in Metro Manila alone.

² ADB. 2021. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Philippines for the Second Health System Enhancement to Address and Limit COVID-19 under the Asia Pacific Vaccine Access Facility*. Due Diligence on the Philippine COVID-19 Immunization Waste Management Plan and Arrangement (accessible from the list of linked documents in Appendix 2). Manila

Environment and Natural Resources (DENR). It also describes the current implementation of the plan to manage COVID-19 immunization waste to identify possible areas for improvement in service provision to ensure the safety and environmental sustainability of the COVID-19 vaccination campaign.

7. The assessment was undertaken through meetings with the Department of Health (DOH) and its relevant bureaus and divisions, and the DENR-Environmental Management Bureau (DENR-EMB). The assessment also includes the review of the implementation of the PNDVP for COVID-19 Vaccines and recent regulations and programs related to HCW management in the country, particularly related to the government's response to the COVID-19 pandemic.

II. LEGAL AND REGULATORY FRAMEWORK

8. The Philippines has a comprehensive and robust legal and policy framework, regulating and guiding health care waste management (HCWM). The Philippines is also signatory or member state to four key international agreements and conventions of relevance to HCWM, including (i) the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal (1989); (ii) the Stockholm Convention on Persistent Organic Pollutants (2001); (iii) the Minamata Convention on Mercury (2013); and (iv) World Health Assembly Resolution on Water, Sanitation and Hygiene (WASH) in Health Care Facilities (2019). Relevant national regulations and requirements on HCWM are discussed in the succeeding sections:

A. Republic Act No. 4226 – Hospital Licensure Act

9. The Hospital Licensure Act (1965) requires the registration and licensure of all hospitals in the country. The law mandates the DOH to provide guidelines for hospital technical standards as to personnel, equipment and physical facilities. Medical waste management planning is an integral part of the registration and licensure requirements for hospitals. These guidelines were issued through the following: (i) Manual on Technical Guidelines for Hospitals and Health facilities Planning and Design (1994), (ii) Health Facilities Maintenance Manual (1995), (iii) Safe Hospitals in Emergencies and Disasters (2011), (iv) National Standards in Infection Control for Healthcare Facilities (2009), and (v) Guidelines in the Planning and Design of a Hospital and other Health Facilities (DOH Administrative Order 2016-0042).

B. DOH Department Circular 2020-0191 – HCWM Manual (4th edition)

10. The DOH issued Department Circular 2020-0191 on 23 April 2020 to institutionalize the implementation of the fourth edition of the HCWM Manual.³ The HCWM Manual serves as a comprehensive set of guidelines on the safe management of waste generated from health care activities in the country. It incorporates the requirements of all Philippine laws and regulations governing HCWM and is aligned with international good practice as recommended by the World Health Organization (WHO).⁴ It is a comprehensive compilation of the latest and most relevant instruments and processes designed for effective implementation of HCWM in all types of health care facilities (HCF) whether in the urban or rural setting. It provides information and guidance regarding safety, environmental regulatory requirements, and environment-friendly treatment

³ The main document of the HCWM Manual fourth edition was prepared through the technical assistance of the World Health Organization (WHO) and the Australian Department of Foreign Affairs and Trade.

⁴ WHO. 2014. *Safe Management of Wastes from Health Care Activities*. Geneva; and WHO. 2019. *Overview of Technologies for the Treatment of Infectious and Sharp Waste from Health Care Facilities*. Geneva.

procedures attendant to the collection, handling, storage, transport, treatment and disposal of HCW.

11. The manual classifies discarded items used in handling vaccines such as vials, or boxes with residues, gloves, and masks as pharmaceutical wastes. The manual is intended and designed for use of individuals, establishments, and other entities involved in the segregation, collection, handling, storage, treatment, and disposal of waste generated. The manual advocates the implementation of the waste management hierarchy by adopting methods of waste minimization, safe re-use, recycling and recovery, and the implementation of proper treatment and disposal for residuals. The manual also advocates the “duty of care” principle whereby every health care facility has the ethical responsibility of ensuring that there are no adverse health effects and environmental consequences resulting from the handling, collection, storage, treatment, and disposal of HCW.

12. Other DOH orders and circulars related to HCW which are still in effect and whose regulations are mentioned in the HCWM Manual are the following:

- DOH Administrative Order No. 2007-0014 or the Guidelines on the Issuance of Certificate of Product Registration for Equipment or Devices used for Treating Sharps, Pathological and Infectious Wastes;
- DOH Circular No. 156-C, series of 1993 – providing guidelines for the segregation, treatment, collection and disposal of hospital waste; and
- DOH Department Memorandum No. 1, series of 2001 – requiring the DOH Central Office Centers for Health Development and all concerned hospitals to practice proper solid waste management.

13. DOH Administrative Order 2007-0014 applies to the licensing of devices and equipment such as autoclaves which are included in the regulated medical devices based on the Bureau of Food and Drug (BFAD) Memorandum Circular No. 7 dated 24 April 1992. The Bureau of Health Devices and Technology (BHDT) of the DOH serves as the technical arm and recommending office for approval of the Certificate of Product Registration (CPR).

C. Republic Act (RA) 6969 – Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

14. The RA 6969 restricts or prohibits the disposal of chemical substances and wastes that present unreasonable risk and/or injury to health and the environment. The legal and technical requirements on hazardous waste management are defined in the implementing rules and regulations in DENR Administrative Order 1992-29 (Title III). The regulations require the registration of hazardous waste generators, transporters, and treaters with the DENR-EMB. The administrative order was further strengthened by virtue of DENR Administrative Order 36, series of 2004 and DENR Administrative Order 2013-22. The updated orders further clarified and streamlined the procedures and requirements on hazardous waste management in light of recent developments. Hazardous wastes are required to be segregated, labeled, kept in proper storage facility, transported, treated and disposed through DENR-licensed facilities.

15. Under the requirements of the RA 6969 and the DENR administrative orders, HCW from hospitals, medical centers and clinics such as pathological wastes (tissues, organs, fetuses, bloods and body fluids), infectious wastes and sharps are categorized as M501 or pathological or

infectious wastes. Expired pharmaceuticals and drugs stocked at producers and retailers' facilities are classified as M503 wastes.

16. HCFs such as hospitals, medical centers and health clinics are regarded as hazardous waste generators and are required to register with the DENR-EMB and to designate a Pollution Control Officer (PCO). All HCW are to be collected and stored in designated areas onsite. The off-site disposal of HCW is permitted only through DENR-registered transporters and treaters that will issue a certification of confirmation of completion of treatment and disposal to the HCF.

17. Transporter, storage and disposal (TSD) facilities are required to have an Environmental Compliance Certificate in accordance with the requirements of Presidential Decree 1586 and registration as TSD facility based on RA 6969. Operation of the TSD facilities should conform with the emission and effluent standards of RA 8749 (Clean Air Act) and RA 9275 (Clean Water Act).

D. DENR-DOH Joint Administrative Order No., 02, series of 2005 – Policies and Guidelines on Effective and Proper Handling, Collection, Transport, Treatment, Storage and Disposal of Health Care Wastes

18. The provisions of the HWC Manual anchors on the DENR-DOH Joint Administrative Order (JAO) No. 02, series of 2005 which clarifies the jurisdiction, authority, and responsibilities of the DENR and the DOH with regard to HCW management. The JAO provides the guidelines to generators, transporters and operators/owners of TSD facilities on proper handling, collection, transport, storage, treatment and disposal of HCW and harmonizes the efforts of the DENR and the DOH on HCW management.

19. HCW such as sharps waste, infectious waste, pathological and anatomical waste, pharmaceutical waste, genotoxic including cytotoxic waste, chemical waste and radioactive waste are classified as hazardous wastes and are regulated by the DENR by virtue of RA 6969 ("Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990") and DAO 2013-22 (Revised Procedures and Standards for the Management of Hazardous Wastes). These wastes are to be segregated, properly labelled, and stored in designated areas within the premises of the medical facility until they are transported for off-site treatment through a DENR-licensed hazardous waste transporter and treater. Permits for storage, transport and disposal are required based on the requirements of RA 6969.

E. Republic Act 8749 - Philippine Clean Air Act

20. Treatment options for infectious wastes are in principle limited to non-burn technologies as provided by Section 20 of RA 8749. The allowed non-burn technologies in the destruction of HCW must comply with the criteria and emission standards provided in Rule 28 of DAO 2000-81.

21. The provisions of RA 8749 were clarified by a DENR Memorandum Circular (DMC-2002-05) which: (i) states that RA 8749 does not prohibit incineration of wastes except those burning processes which emit poisonous and toxic fumes; (ii) recognizes that appropriate disposal techniques for medical and bio-medical wastes are limited; and (iii) incineration of these wastes is only permitted in state-of-the-art facilities which are proven to emit minimal air pollutants with concentrations meeting RA 8749 criteria. The phasing out of bio-medical incinerators contemplated under RA 8749 was deemed impracticable due to lack of affordable best available technology.

F. Republic Act 9003 – Ecological Solid Waste Management Act

22. The Act establishes the mechanisms for waste minimization, resource recovery, appropriate collection, transport services, environmentally sound treatment, and disposal of garbage. It also provides mandatory segregation of waste at households, commercial establishments, industries, institutions, hospitals, etc. However, solid waste excludes infectious wastes from hospitals such as equipment, utensils, laboratory wastes, pathological specimens, disposable fomites, and similar materials in accordance with Section 3(2), Article 2, and Section I of DAO 2001-34.

23. The collection and transport of segregated general wastes or non-infectious wastes are covered by RA 9003 and may be brought to a landfill for disposal. The collection and transport of infectious biomedical wastes or hazardous wastes are governed by RA 6969 and cannot be disposed in open dumps or landfill. The infectious wastes, once disinfected, may be treated similar to a general waste.

G. Interim Guidelines on Health Care Waste Management during COVID-19 Pandemic

24. In response to the COVID-19 pandemic, series of interim guidelines on HCWM were issued by DOH and the DENR.

- DOH Memorandum 2021-0030 – Reverse Logistics Commissioned to Integrated Waste Management Incorporated issued on 27 July 2021;
- DOH Memorandum 2021-0031 – Interim Guidelines on the Management of Health Care Wastes Generation from COVID-19 Vaccination issued on 18 January 2021;
- DOH Memorandum 2020-0072 – DOH Interim Guidelines for 2019 Novel Coronavirus Acute Respiratory Disease Response in Hospitals and other Health Facilities (https://drive.google.com/file/d/1zmXeJt_3kmlOzyJyt9laVXTfk6JKJsbT/preview);
- DOH Memorandum No. 2020-0170 – DOH Interim Guidelines on the Management of Health Care Waste in Health Facilities, Community Quarantine Units and Temporary Treatment and Monitoring Facilities with cases of Coronavirus Disease 2019 (COVID-19) (<https://doh.gov.ph/node/21257>);
- EMB Memorandum Circular No. 2020-14 – Interim Guidelines on Issuance of Special Permit to Transport (SPTT) for the Transport of Hazardous Waste Within the Community Quarantine Period (<https://emb.gov.ph/wp-content/uploads/2020/03/EMB-MC-2020-14-Interim-Guidelines-on-issuance-of-Special-Permit-to-Transport-SPTT-for-the-Transport-of-Hazardous-Waste-within-the-Community-Quarantine-Period-1.pdf>);
- EMB Memorandum Circular No. 2020-15 – Addendum to the Interim Guidelines on Issuance of SPTT for the Transportation of Hazardous Wastes within the Community Quarantine Period (<https://emb.gov.ph/wp-content/uploads/2020/03/EMB-MC-2020-15-Addendum-to-the-Interim-Guidelines-on-Issuance-of-Special-Permit-to-Transport-SPTT-for-the-Transportation-of-Hazardous-Wastes-within-the-Community-Quarantine-Period.pdf>);
- EMB Memorandum Circular 2020-16 – Amendment of the Interim Guidelines on Issuance

of SPTT for the Transportation of Hazardous Wastes within the Community Quarantine Period (<https://emb.gov.ph/wp-content/uploads/2020/04/EMB-MC-2020-16.png>);

- EMB Memorandum Circular 2020-19 – Clarificatory Guidance on the Issuance of Hazardous Waste Generator (HWG) Registration for Malls or Commercial Building Owners and Clustered Establishments (<https://emb.gov.ph/wp-content/uploads/2020/05/EMB-MC-2020-19.pdf>); and
- EMB Memorandum Circular 2020-20 - Provisional Guidelines on the Hazardous Wastes Management During the Extended Enhanced Community Quarantine Period (<https://emb.gov.ph/wp-content/uploads/2020/05/EMB-MC-2020-20.pdf>).

25. DOH Memorandum 2021-0031 is the guidelines specific to the management of HCW from the roll-out of the COVID-19 vaccination. It specifies the protocols for onsite and offsite disposal of wastes. It also identifies the waste collection points in areas without service providers where wastes will be collected through a DENR-licensed TSD facility that will be contracted by the DOH Central Office. DOH Memorandum No. 2020-0170 requires all HCF, community quarantine facilities, and temporary treatment and monitoring facilities to follow a waste management plan for COVID-19 health care wastes. The plan includes the proper segregation of all infectious wastes generated from the treatment of suspected, probable or confirmed COVID-19 patients such as personal protective equipment (PPEs), shoe cover, apron, long-sleeved gown, gloves, masks and goggles or face shield, other solid and liquid wastes (e.g. urine, blood, and other body fluids) using appropriate receptacles (yellow plastic bags, waste bins, sharp containers). The DOH memorandum also prescribes the requirements regarding labelling, disinfection, cleaning and allowable storage periods at the central storage of infectious wastes. Transport and off-site disposal of the infectious wastes must conform to the rules and regulations of the DENR-EMB.

26. DOH Memorandum 2020-0072 provides interim guidelines for all health facilities on the necessary precautions, preparations of health facilities and management of suspect, probable and confirmed cases of COVID-19. All hospitals and health facilities are required to maintain an Infection Prevention and Control Committee in the health facility and to follow the National Standards in Infection Control for Healthcare Facilities (2009 edition). The memorandum includes the requirements on provision of appropriate PPE, implementation of universal precautionary measures, patient screening, isolation of patients with COVID-19 systems, notification, and clinical management.

27. DENR memorandum circulars 2020-14, 2020-15, 2020-16, and 2020-20 were issued to protect public health and safety due to the COVID-19 situation in the island of Luzon and to implement unhampered transportation of hazardous waste coming from healthcare facilities to TSD facilities due to the COVID-19 emergency. The guidelines apply to registered transporters and TSD facilities which haul, treat, and dispose HCW. The DENR-EMB requires the use of the online registration system to simplify the procedures in the issuance of Permit to Transport for HCW. Transporters are required to implement the health and environmental plan and to submit a report of compliance and completion of transport of the HCW to DENR-EMB within 24 hours after delivery to the TSD facility. Transporters with valid permits are allowed to pass-thru checkpoints to deliver HCW at TSD facilities.

28. Under EMB Memorandum Circular 2020-19, the EMB allows the registration of clustered establishments that includes facilities that have service agreement with EMB-registered transporters and TSD facilities. In such case, the collection points of vaccination wastes from

Centers for Health Development (CHDs) and Provincial Health Offices (PHOs) are required to obtain a Hazardous Waste Generator registration for M501 wastes that are generated and collected from the vaccination sites. The registered CHOs and PHOs will be given a unique HW generator ID and will be required to submit the Self-Monitoring Report together with the inventory of hazardous wastes generated per individual vaccination sites.

H. Administrative Orders and Guidelines on Waste Management

29. The following presents guidelines and administrative orders that have been prepared by DOH/DENR to improve existing policies on waste management.

1. EMB Memorandum Circular 2021-13 – Mobile Treatment of Hazardous Waste

30. The EMB issued Memorandum Circular 2021-13 to allow the use of mobile equipment or treatment equipment for the treatment of hazardous waste. The circular also allows waste generators with multiple installations at various locations and regions to transport hazardous waste for consolidation purposes in a designated clustered TSD facility subject to certain conditions. The provisions of the Memorandum Circular are incorporated in the proposed amendments to DENR Administrative Order 2013-22 (Revised Procedures and Standards for the Management of Hazardous Wastes). Mobile treatment facilities are categorized under Category F in the classification of TSD facilities.

2. EMB Memorandum Circular 2021-14 – Guidelines on the Use of Alternative Fuels and Raw Materials in Cement Kilns

31. The DENR-EMB issued Memorandum Circular 2021-14 to allow non-pathological wastes such as PPEs, aprons, dextrose, and other similar wastes to be used as alternative fuels and raw materials for clinker for cement production provided that the procedures comply with the procedures on waste segregation at source, waste delivery control, occupational health and safety, emission limits, documentation and reporting. Used syringes and vials are still not allowed in cement kilns as raw materials.

III. CURRENT PRACTICES IN MEDICAL WASTE MANAGEMENT

32. The COVID-19 pandemic resulted to an increase in waste generation from hospitals, laboratories and other health facilities. Wastes generally consists of the PPEs used by medical frontliners and their patients. Based on information from the DENR, the total generated healthcare waste from April 2020 to June 2021 amounted to 634,687 metric tons. Most of these wastes are non-pathological infectious wastes such as used PPEs (surgical masks, gloves, coveralls, head/foot covers), swabs, and test kits.

33. The Government of the Philippines, through the DOH, is successfully implementing the plan to manage COVID-19 immunization waste. The DOH, with support from the United Nations Children's Fund (UNICEF) and the WHO, developed the COVID-19 Vaccine Introduction Readiness Assessment Tool (VIRAT) in November 2020 which looks at four core activities: (i) planning and management; (ii) supply and distribution; (iii) program delivery; and (iv) supporting systems and infrastructure. Key indicators related to the management of wastes from the immunization program are captured in the VIRAT, including: (i) waste management protocols for COVID-19 vaccination, both hazardous and non-hazardous, including development and dissemination of practices and guidelines for disposal routes, (ii) appropriate waste management

systems in all relevant sites, and adequately trained human resources, and (iii) properly-licensed waste management providers (especially hazardous waste storage, transportation and disposal) are identified and mobilized.

34. The Government's COVID-19 National Vaccination Roadmap provides the strategic guidance in the implementation of the deployment and vaccination program. The National Task Force Against COVID-19 (NTF) has issued last 26 January 2021 Memorandum Circular No. 5, series of 2021 on the **Adaption and Implementation of the Philippine National Deployment and Vaccination Plan for COVID-19 Vaccines** with reference to the IATF Resolution No. 95 series of 2021 (21 January 2021) which approved and ratified the PNDVP. The NTF Memorandum mandates all regional and local COVID-19 Task Forces and Vaccination Operations Centers to implement the PNDVP which contains guidelines on the procurement of vaccines, shipment and storage, distribution and deployment, implementation of nationwide vaccination, and assessment evaluation and monitoring. The plan also defines clear requirements related to injection safety, the management of HCW, and the reverse logistics concept of HCW management.

35. Based on the plan, vaccines and other immunization supplies are delivered from the national level to the CHDs and to the Ministry of Health at the BARMM at the regional level, and then through the local COVID-19 Vaccination Operations Center (VOC) at the local government unit (LGU) level. The CHDs and the LGUs as well as those that are identified as recipients of these immunization commodities must develop their distribution plan with mapping of vaccination workforce, implementing units and vaccination sites/posts. All staff are to receive training relevant to their roles in the team and service.

36. The plan requires that throughout the implementation of COVID-19 vaccination plan, infection prevention and control measures must be practiced and that HCW generated at the HCF after vaccination are properly managed. The plan refers to the waste classification guidelines of the DENR, i.e., pathological or infectious waste as M501 and pharmaceuticals and drugs as M503.

37. Following the lessons and experience from past vaccination programs, the DOH implements the on-site management of immunization wastes as provided in the HCWM Manual. These include proper waste segregation and packaging, labelling, safe storage in septic vaults, and the reverse logistic program through a third-party transporter and treater that is registered with the DENR. The HCWM manual is currently being used for routine and regular immunization programs in terms of managing HCW in various types of HCF in the country.

38. Under the PNDVP for COVID-19 Vaccines, a HCF or implementing unit must identify personnel as part of the COVID-19 vaccine waste team that will ensure all HCW generated from the vaccination activities are properly collected and disposed either on-site or offsite. Volume or amount of waste generated must be recorded.

39. In line with the roll-out of the COVID-19 vaccination plan, the DOH issued **Department Memorandum No. 2021-0031** on 18 January 2021 that provides the interim guidelines to all CHDs, DOH Bureaus, medical centers, hospitals, sanitariums, institutes, and health care facilities on the proper management of health care wastes generated from the COVID-19 vaccination activities. The memorandum requires the segregation of the different infectious wastes such as empty vaccine vials, syringes/sharps, PPEs, cottons, tissues, and other materials at the point of generation in designated puncture-proof container bags, waste bins with cover, and then labelled

properly. It also outlines the requirements for waste collection, storage within the HCF, as well as the offsite waste transport and disposal.

40. In April 2021, the National COVID-19 Vaccination Operations Center issued Advisory No. 34 on the roll-out of the support supervision activities in all vaccination sites. The two-part Vaccination Site Supportive Supervision Tool was introduced to assess the competency of vaccination teams and the implementation of processes at the vaccination sites. The supervision is undertaken by the CHDs, specifically the Development Management Officers (DMOs). Included in the tool are: (i) knowledge on COVID-19 vaccines; (ii) skills on vaccine administration process; (iii) skills on post-vaccination monitoring and AEFI response; and (iv) the vaccination site support requirements such as site set-up, equipment and resources, cold chain management and reverse logistics, coordination and supervision, vaccination process, and data management. The elements of reverse logistics include (i) placement of used vials in resealable plastic (20 vials/plastic) with proper labels; (ii) placement of filled-up resealable plastics in yellow sack that are properly segregated and prepared for pick-up; and (iii) use of safety collector boxes for used syringes which are then segregated and prepared for pick-up.

41. The DOH has issued **Department Memorandum No. 2021-0330** on 27 July 2021 on the implementation of the “Reverse Logistics” program and the commissioning of the Integrated Waste Management, Inc. (IWMI) as the third-party service provider responsible for the hauling of immunization waste from designated storage facilities or collection points at the CHDs, PHOs and BARMM MOH. The reverse logistics system follows the previous immunization activities of DOH for oral polio immunization campaign whereby a DENR-registered third party TSD service provider was commissioned by DOH to collect the immunization wastes from regional hubs or collection points of the DOH for treatment. Appendix B presents the designated waste collection points. These regional collection points are where the CHDs/rural health units (RHUs) transport the immunization wastes which are then collected by the third-party TSD service provider (IWMI) for treatment and final disposal at its facility in Cavite following the requirements of the DENR on hazardous waste collection, transport and treatment. IWMI has a pyrolysis (i.e. high-heat, non-combustion) treatment facility with heating value of 800°C (primary chamber) up to 1,200°C (secondary chamber) that is approved by the DENR.⁵ Other collection points apply the onsite treatment through burial in pits.

42. The following describes the HCW and COVID-19 immunization waste management currently in place.

A. Waste Management

1. At Vaccination Sites

43. After each vaccination day, the COVID-19 empty vials are packed by 20's in resealable plastic bags (Photo 1.1). These are then placed in yellow puncture-proof plastic bags for infectious waste and labelled properly. Sharps and syringes are placed in safety collector boxes (Photo 1.2). Defective vaccines are likewise segregated and packed in 20's in resealable bags (Photo 1.3). If the defect is due to manufacturer quality, these defective vials are returned to the manufacturer

⁵ Pyrolysis is the thermal decomposition of substance and materials in the absence of supplied molecular oxygen in the destruction chamber in which waste is converted into gaseous, liquid or solid form. Waste residues are in form of greasy aggregates or slugs and low combustible gas emissions. Poorly designed and/or operated pyrolysis systems may emit dioxins and furans. The facility was granted by the DENR with an Environmental Compliance Certificate and holds valid permits such as a Permit to Operate and a Discharge Permit.

for replacement at the cost of the manufacturer. However, if the defective vaccines were a result of handling by users, the vaccines are considered as hazardous wastes and are either safely disposed in on-site burial pits or collected by IWMI for treatment and disposal.

44. The logistics person at the vaccination site is required to accomplish Form A1 at the end of the vaccination day to record the quantity of used vaccine vials and other wastes (Photo 1.4). The immunization wastes are then transported to the temporary storage facility or waste collection points at the RHUs or PHOs.

Photo 1: COVID-19 Immunization Waste Management at Vaccination Sites



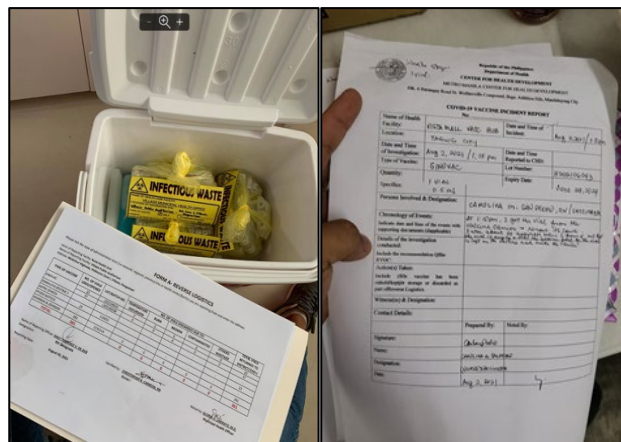
1.1: Used vials grouped in 20's per resealable bag



1.2: Yellow puncture-proof bags for vaccination wastes



1.3: Safety collector boxes for sharps
Source: Department of Health.



1.4: Recording after immunization event

2. At Health Care Facilities

45. As part of the licensing process, HCFs are required to formulate a policy formalizing the HCF commitment to properly manage its waste; establish a formal HCWM management plan and a HCWM Committee; appoint a Waste Management Officer to supervise and coordinate HCWM planning and its subsequent implementation; and ensure compliance with the HCWM manual.

The DOH reported that more than 90% of HCFs in the country have developed a waste management plan for COVID-19 immunization.

46. Immunization done at hospitals and RHUs basically follows the same process implemented at vaccination sites. The DOH requires the waste segregation and packaging of wastes such as sharps and infectious non-sharp wastes (vials, bottles, residues, gloves, masks) from immunization activities. The following procedures are observed by the HCFs:

- Segregation of sharps from non-sharps;
- Discarding of syringe with needle into a safety box after use;
- Placing of safety boxes into plastic bags that are closed hermetically when full to avoid any leakage during transportation; plastic bags should be clearly labelled; and
- Placing empty vials into clearly marked and sealed waste containers with plastic lining to avoid leakage.

B. Waste Collection and Transport

47. At HCFs, general service personnel are assigned to bring wastes to a designated on-site storage area within the HCF using wheeled trolleys/carts or wheeled bins. Hazardous and non-hazardous wastes are to be transported separately; infectious waste can be transported together with the used sharps wastes to the temporary onsite-storage area. Trolleys used for the transport of wastes are to be disinfected after every use. At the end of the vaccination period, accounted empty/opened vials will be kept safe in the HCF while waiting for pickup by the CHD for further processing. The A1 form is accomplished to record all used and unused vials at the end of each vaccination period to enable DOH to monitor the distribution and utilization of the vaccines and the vaccine wastage rate.

48. From the vaccination sites, the used vials are transported to the CHDs or PHOs together with the A1 Form documentation. These are brought to the central waste collection/storage area at CHDs or PHOs. The Supervisor at the vaccination site endorses the Form A1 to the RHU/CHO COVID-19 Vaccination Coordinator at the end of every vaccination day who then summarizes the information from all vaccination sites by accomplishing Form A. At the RHU/CHO level, the Sanitary Inspector (SI) fills out the Manifest Form of the DENR prior to transport to the PHO. The SI also coordinates the transport of the wastes to the PHO using the transport vehicle of the LGU or CHD and turns over the summarized Form A and DENR Manifest Form to the Provincial Sanitary Engineer/Inspector every Friday. The Provincial Sanitary Engineer is the one in-charge of coordinating the transport of wastes to the CHD and the collection of the wastes by IWMI.

Photo 2: Storage facility for immunization wastes

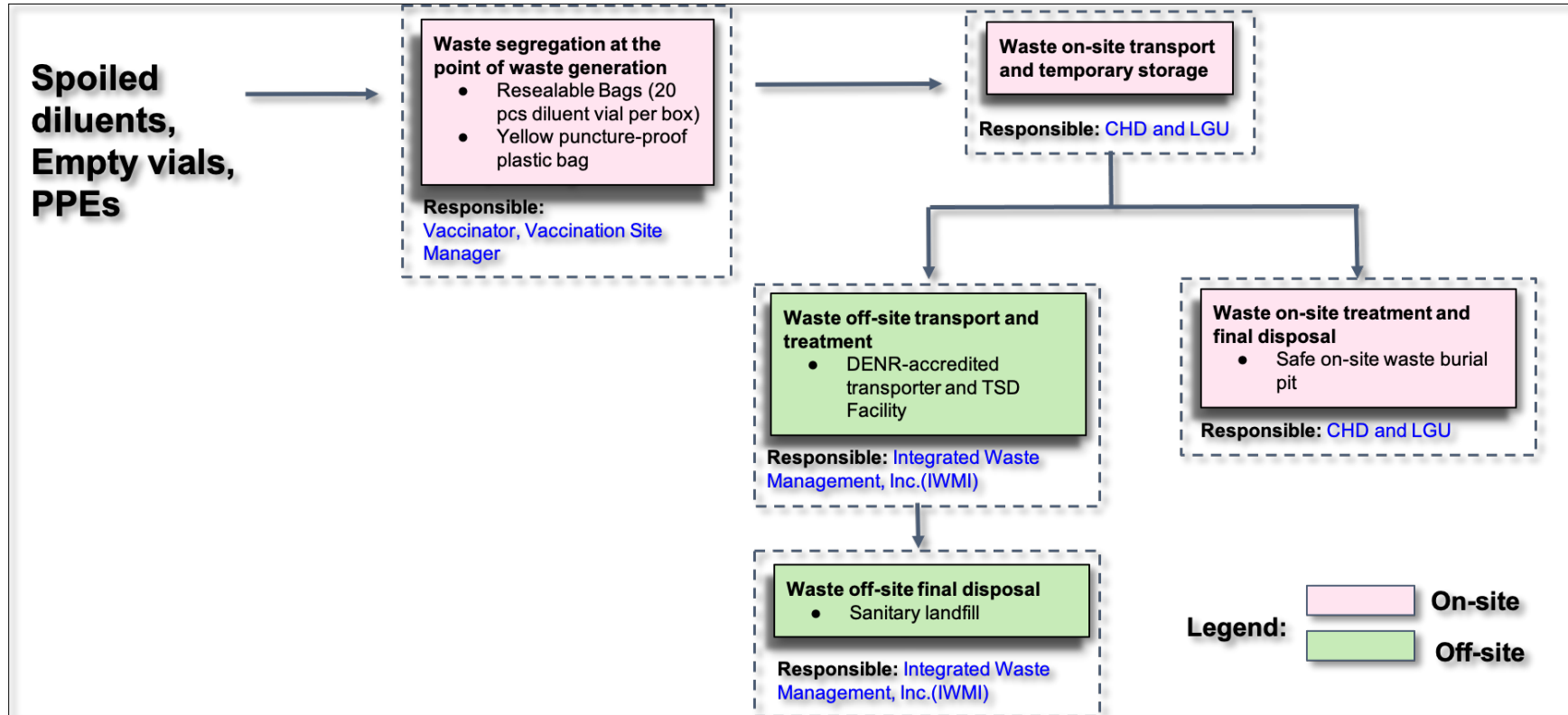


Source: Department of Health.

49. The DENR-EMB granted a Special Permit to Transport (SPTT) to DOH, allowing movement of immunization wastes generated from the COVID-19 immunization program from the vaccination sites to the regional CHDs/RHUs where the wastes is temporarily stored and collected by the third-party TSD service provider (IWMI) for treatment at its facility. The SPTT is valid until 31 December 2021. The SPTTs for infectious (M501) and pharmaceutical (M503) wastes are allowed by DENR only for transporters and TSD facilities commissioned by DOH that are registered with the EMB's Online Hazardous Waste Management System. The special consideration covers only the identified waste collection points at the CHDs and PHOs. The DOH plans to request for an extension of the SPTT that was granted by DENR beyond 2021. Following the guidance received from the DENR, the DOH will also plan for the registration of the CHDs and PHOs as hazardous waste generators in accordance with the requirements of DENR Administrative Order 2013-22 and EMB Memorandum Circular 2020-19. Once registered, the CHDs and PHOs are to report the wastes received from the vaccination sites at DENR's Online Hazardous Waste Management System and to coordinate with the EMB Regional Offices for assistance.

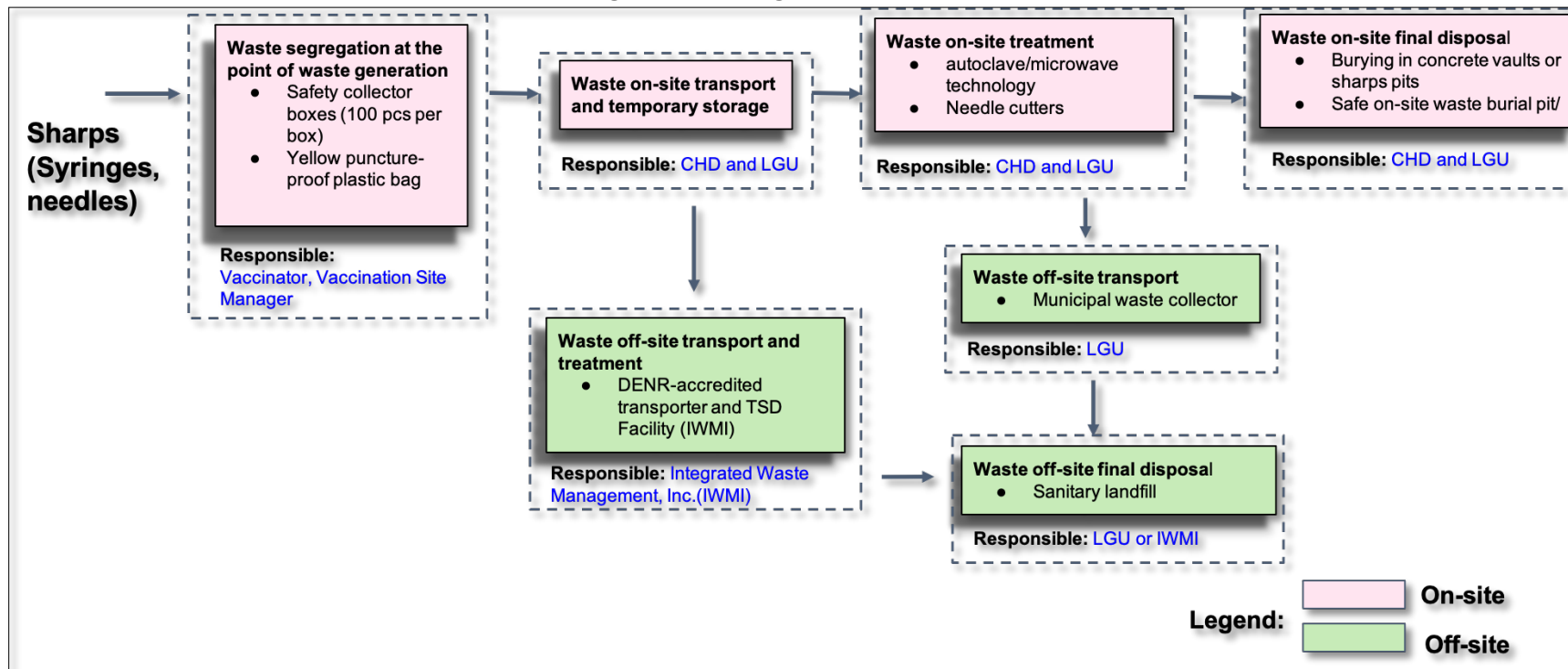
50. Transport and the volume of wastes disposed/treated by the TSD facility are reported. Information from the EMB regional offices are sent on a daily basis to the EMB central office and then submitted to the Inter-Agency Task Force for the Management of Emerging Infectious Diseases to properly account the waste generation rate and its safe disposal. On the other hand, the DOH prepares the summary of COVID-19 Form A and DENR Manifest Forms from provinces and cities and submits the report to the National Vaccination Operations Center (NVOC).

Figure 1: Management of Spoiled Diluents, Empty Vials, and PPEs



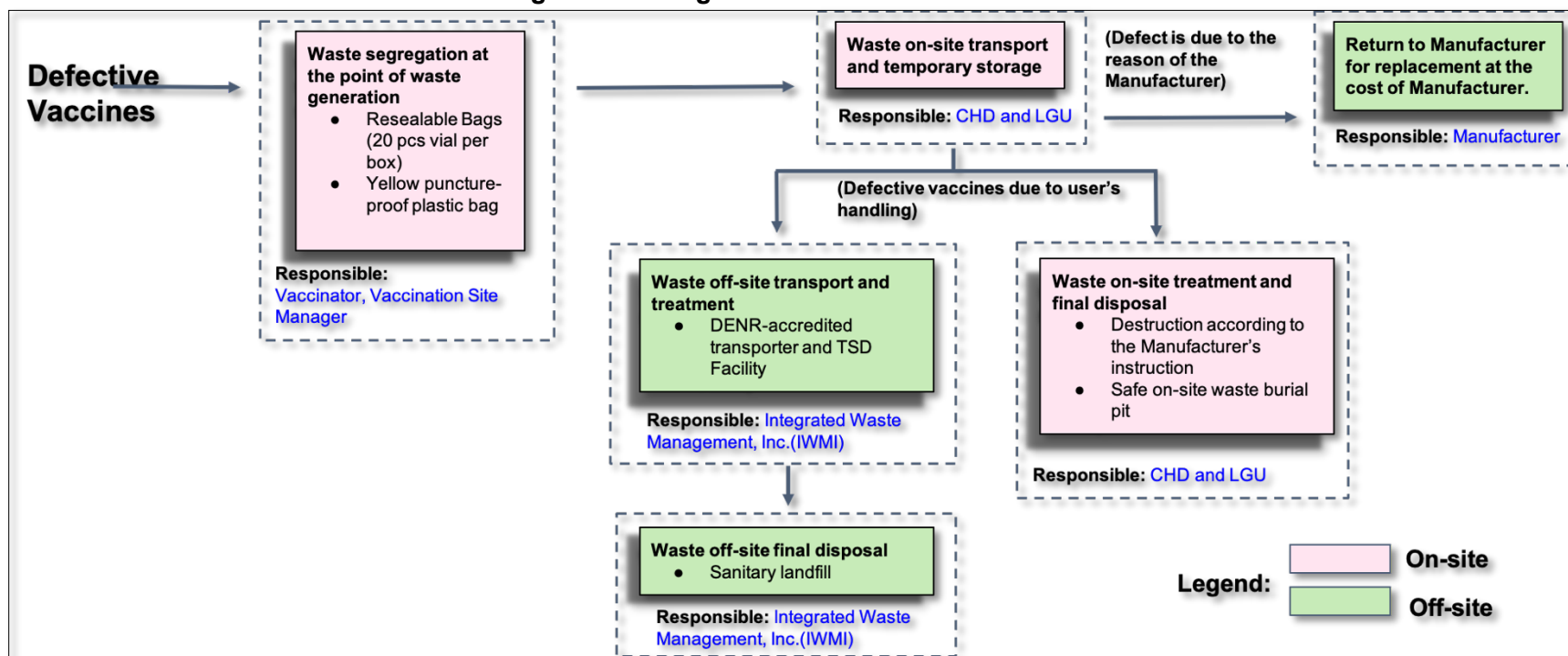
Source: Department of Health.

Figure 2: Management of Sharps



Source: Department of Health.

Figure 3: Management of Defective Vaccines



Source: Department of Health.

C. On-site and Off-Site Treatment and Disposal of Health Care Waste

1. On-site

51. The DOH allows on-site burial within the HCFs for treated infectious waste, sharps, pathological and anatomical waste, small quantities of encapsulated/inertized solid chemical and pharmaceutical wastes. The HCWM Manual recommends safe burial as a transitional, interim solution only and is allowed if the HCF (i) is located in a remote and far-flung area; (ii) does not have access to TSD facilities; (iii) is located in an LGU with an income classification of fifth or sixth class; (iv) is located in first to fourth class LGU with available area within the HCF premises, but only pathological, anatomical, expired drugs and sharps waste can be buried; and (v) safe burial within the premises is the only viable option such as in temporary camps.

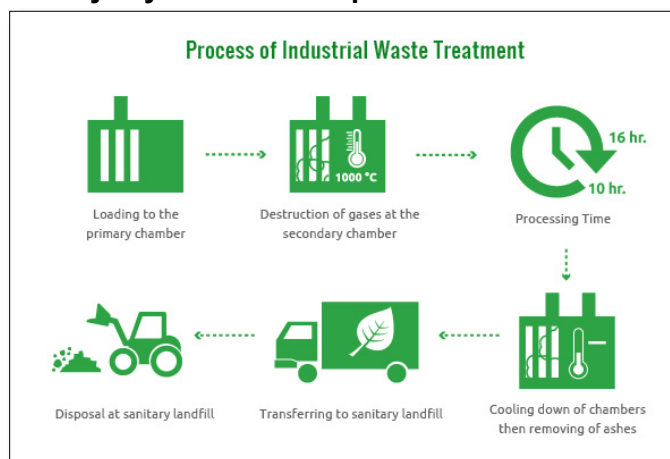
52. Following DENR's requirements for on-site waste treatment and disposal, the CHDs and PHOs that are employing safe on-site burial of vaccination wastes in septic vaults are required to register with DENR as Category A waste treater aside from registering as hazardous waste generator.

2. Off-site

53. Offsite disposal of COVID-19 immunization wastes is contracted by DOH through IWMI (a third-party service provider that is registered by the DENR) through a competitive bidding process. Collection of wastes is supposed to occur every two weeks but to save on transport cost, the regional offices have requested IWMI to collect the wastes once adequate volume are available for treatment. The DOH is set to conduct an evaluation of the waste segregation and IWMI's waste management and treatment process in accordance with the terms of reference.

54. The vaccination wastes generated in Luzon and Visayas are brought to IWMI's treatment facility in Cavite (Photo 2). The pyrolytic thermal oxidizer of IWMI is equipped with a scrubber system. DENR-EMB requires IWMI to conduct annual emissions tests for dioxins and furans through a DENR-accredited third-party monitoring company as a requisite in the renewal of its Permit to Operate. In addition, stack emission tests for SO_x, NO_x, and PM are reported semi-annually to DENR. The treated wastes are then brought by IWMI to Metro Clark Sanitary Landfill for final disposal.

Figure 4: Pyrolysis treatment process of IWMI Inc. in Cavite



Source: [Integrated Waste Management, Inc.](#)

55. In Mindanao, IWMI plans to deploy the Micro Auto Gasification System (MAGS) which is a mobile equipment that can be stationed in different locations to treat the vaccination wastes. IWMI has already installed the MAGS in Butuan City, Agusan de Norte, while the TSD Registration Certification and local government permits are being processed. The IWMI is also looking for sites in Davao City and Zamboanga City as next locations of the MAGS. Toxicity Characteristics Leaching Procedure test will be conducted on residual ash to determine if this is acceptable for disposal in a landfill. A sanitary landfill equipped to receive the treated immunization wastes in Mindanao is still being identified.



56. The contract with IWMI is valid until 31 December 2021. For 2022, the Department of Budget and Management has approved the budget for waste disposal. If there would be delays or problems in contracting for next year, the DOH will extend the IWMI contract for another three months in 2022 until the new contract for the third-party service provider is approved.

57. As of 31 August 2021, there are a total 26 TSD facilities nationwide that are registered by the DENR-EMB to treat M501 wastes. Central Luzon or Region 3 has the highest number of HCW TSDs with nine, followed by Region IVA with four. Luzon Island has the greatest number of TSDs, but these are primarily located in Metro Manila, Central Luzon, and CALABARZON. In Visayas, there are five TSDs on HCW in the provinces of Cebu and Leyte. There are also two registered TSDs for HCW in Misamis Oriental. Seven regions are without TSDs for HCW, namely, (i) Region 2, (ii) Region 6, (iii) Region 9, (iv) Region 11, (v) Region 12, (vi) CAR, and (vii) BARMM. The EMB reported that the treatment capacity of the registered TSD facilities is more than enough for the amount of HCW currently generated in the country. The generated HCW as of 30 June 2021 is approximately 11.30% of the total capacity of the existing TSD facilities nationwide.

Table 1: Registered TSD Facilities for Health Care Wastes (M501) as of August 2021

Region	Number of TSDs
Cordillera Administrative Region	0
National Capital Region or Metro Manila	3
Ilocos (Region 1)	1
Cagayan Valley (Region 2)	0
Central Luzon (Region 3)	179
CALABARZON (Region 4A)	114
MIMAROPA (Region 4B)	1

Region	Number of TSDs
Bicol (Region 5)	1
Western Visayas (Region 6)	0
Central Visayas (Region 7)	3
Eastern Visayas (Region 8)	2
Zamboanga Peninsula (Region 9)	0
Northern Mindanao (Region 10)	2
Davao (Region 11)	0
SOCCKSARGEN (Region 12)	0
CARAGA (Region 13)	0
BARMM	0
TOTAL	26

BARMM = Bangsamoro Autonomous Region in Muslim Mindanao; CALABARZON = Batangas, Cavite, Laguna, Quezon and Rizal; CARAGA = Agusan del Norte, Agusan del Sur, Dinagat Islands, Surigao del Sur; MIMAROPA = Marinduque, Occidental Mindoro, Oriental Mindoro, Palawan, Romblon; SOCCSKSARGEN = Sarangani, South Cotabato, Sultan Kudarat, Cotabato; TSD = transporter, storage and disposal.

Source: DENR-EMB. 2021. [List of Registered TSD Facilities as of 31 August 2021](#). Manila.

58. Majority of the TSDs fall under Category B and uses thermal treatment for HCW such as pyrolysis. Each TSD is evaluated and monitored by EMB to check compliance with the requirements of DMC-2002-05. There are also four cement kilns and one steel mill that are able to treat M503 wastes. Table 2 presents the DENR category of TSDs and the number of TSDs for HCW per according to the treatment method category.

Table 2: Category and Method of Treatment of Health Care Waste TSD Facilities

Category	Description of Treatment Method	Number of TSDs on HCW
A	Onsite treatment and disposal facilities	1
B	Thermal treatment facilities (either burn or non-burn) such as pyrolysis, autoclave (hydroclave/pyroclave) for M501, thermal decomposition (thermolysis), thermal evaporation	218
C	Disposal facilities (sanitary landfill, surface impoundments) that accept only inert or treated hazardous wastes for final disposal in a dedicated cell, hazardous wastes for final disposal such as solidified, encapsulated wastes	1
D	Recycling facilities that recover valuable materials (i.e., used or waste oil, solvents, acids, alkalis, metals, etc.), use hazardous wastes as input materials or alternative fuel for industrial processes, remediate contaminated soil thru physical, chemical or biological treatment.	0
E	Chemical treatment facilities that accept and treat hazardous wastes, which are not generated or produced at the facility using chemical immobilization, polymeric filtration, chemical decomposition, solvent extraction	181
F	Storage facilities for hazardous wastes, which were not generated from the facility awaiting transport for treatment, disposal or export such as Material Recovery Facilities, Buildings that store containers, vessels, or tanks containing hazardous wastes, and Built tanks that store liquid hazardous wastes	2

HCW = health care waste, TSD = transporter, storage and disposal.

Note: A TSD may employ more than one type of treatment methods.

Source: DENR-EMB. 2020. [List of Registered TSD Facilities](#). Manila.

D. Monitoring of Health Care Wastes

59. The HEAL2 project has developed a monitoring framework that includes indicators on COVID-19 immunization waste management. The status of the COVID-19 vaccination delivery

including waste management are reported to ADB on a quarterly basis. The monitoring framework (shown in Appendix C) consists of activities/targets and verifiable indicators on immunization waste management such as on environmental complaints, adverse environmental and safety related incidents, percentage of vaccine wastage, HCFs with waste management plan for COVID-19 immunization, waste segregation and storage, designation of Pollution Control Officer or Waste Management Officer at HCFs, completion of DENR Hazardous Waste Manifest, online HCW registration with DENR, approved Permits to Transport (PTT), and Certificates of Treatment issued by TSD for treatment of wastes. The monitoring framework also specifies the means of verification of the indicators through actual inspection, permits, records and reports.

60. Under the Reverse Logistics program, three designated personnel from the CHDs and PHOs are required to accomplish the Reverse Logistics Form which contains information on the name of the vaccine, number of vials used/opened, Lot/Batch No., number of vials discarded due to temperature excursion, burn, broken, contaminated, and others, and the total vials endorsed to IWMI for destruction. All empty and unopened vials should be returned daily and properly accounted and documented by the vaccination team using a prescribed “End of Vaccination Permit Distribution and Utilization Report (DUR)”. The Reverse Logistics Form A1 serves as the Waste Manifest Form (Photo 1.4). Information in the A1 Form is consolidated to Form A2 by the central reverse logistics point person at the CHD/PHO to monitor the quantity of wastes that is collected by IWMI.

61. The Supply Chain Management Service of DOH summarizes the reports from the CHDs on vaccine wastage. As of 10 September 2021, the total wastage is 10,507 doses for all brands of COVID-19 vaccines. The data on wastage are reported to the NVOC on a weekly basis. From 24 June 2021 to 16 September 2021, IWMI has collected and treated 54 tons of COVID-19 immunization wastes coming from CHDs in Metro Manila alone. IWMI is scheduled to collect wastes from other CHDs and PHOs but advised that it would wait until sufficient waste is ready for collection. There is no consolidated summary of COVID-19 vaccination wastes that are being disposed in septic vaults.

62. The movement of wastes once removed from the HCF follows a rigorous system of monitoring through the DENR’s Hazardous Waste Manifest system as stipulated in RA 6969 and its implementing rules and regulations. Only DENR-registered transporters are allowed to collect hazardous waste from a generator. As required by the DENR-EMB, the transporter should have an emergency and contingency plan and drivers and helpers should be certified on waste management and emergency preparedness and response. The transport vehicle should have warning signs and markings on the waste identification, classification, and symbols, and safety data sheet. Workers transporting the wastes are required to wear personal protective equipment. The requirements are also outlined in the DOH’s HCWM Manual which follows the Technical Guidelines on Transport of Infectious Clinical Wastes (UN 3291).

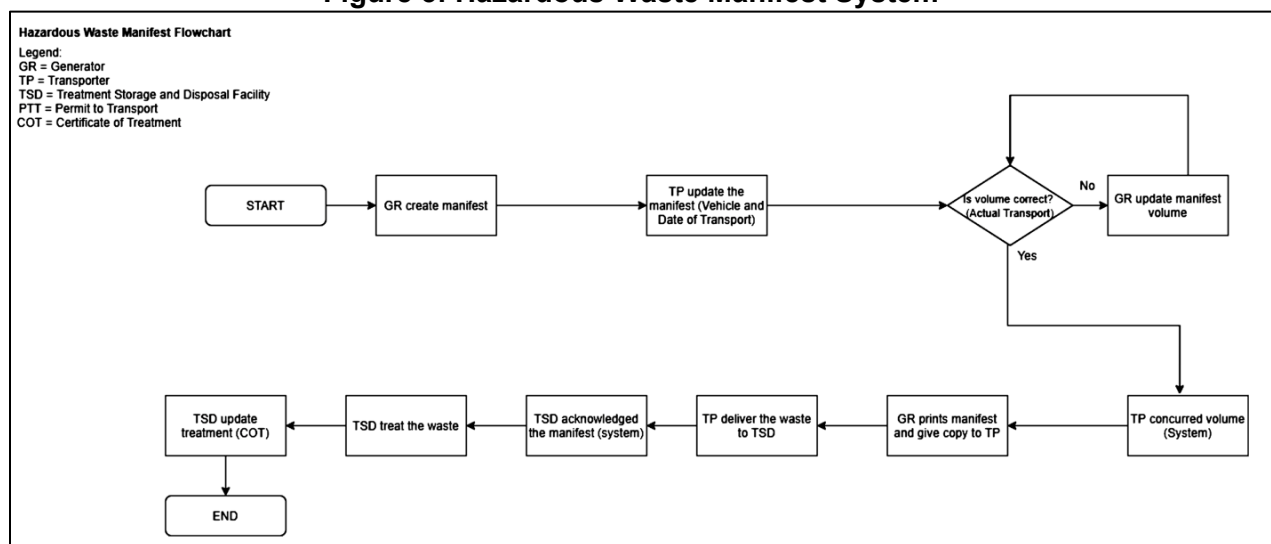
63. The waste manifest is first prepared and is forwarded to the transporter and then the treater until a Certificate of Treatment is issued by the treater ascertaining the safe treatment and disposal of the wastes. This process follows the “cradle to grave” concept on waste management as required in the implementing rules and regulations of RA 6969 (Figure 2).

64. The DENR-EMB is able to monitor the quantities of HCW transported through the approved Permit to Transport that are issued from the EMB regional offices. Reports from the EMB regional offices are sent on a daily basis to the EMB central office and then submitted to the Inter-Agency Task Force for the Management of Emerging Infectious Diseases.

65. The DENR is also able to monitor activities of the treaters through the permitting system that is established. Most of the wastes are treated in the TSD facilities located in the more urban areas in Luzon, but the other regions still lack these treatment services. The DENR suggests the opening of opportunities for more investments for the establishment of HCW treatment facilities in other regions. The regulations are already in place, and the DENR continues to use the online system of registration to help facilitate the movement of HCW until its safe treatment and disposal at TSD facilities.

66. For CHDs and PHOs that receive the wastes from the different vaccination sites, the DENR requires the registration at EMB's online system and the reporting of the inventory of wastes collected from the different vaccination sites. Currently, the CHDs and PHOs are not yet registered as hazardous waste generators, and the IWMI as waste transporter accomplishes the Manifest Form for wastes collected from the CHDs and PHOs and which are brought for treatment at its facility in Cavite. Based on information gathered in the meeting with the DENR-EMB, the DOH is required to register the CHDs and PHOs as hazardous waste generators and also as Category A TSD for those CHDs and PHOs that undertake onsite burial of wastes in septic vaults. This way more accurate information will be shared between DOH and DENR using the Manifest System.

Figure 5: Hazardous Waste Manifest System



Source: Department of Environment and Natural Resources-Environmental Management Bureau.

E. Training and Capacity Building

67. The DOH has conducted the cluster-based Training of Trainers for the regional officers for five identified clusters (North Luzon, South Luzon, Visayas, North Mindanao, and South Mindanao) in preparation to the implementation of the COVID-19 vaccination program including the waste management plan. The training includes HCW management and reverse logistics. Meetings with the regional environmental and health coordinators are ongoing to coordinate the trainings and implementation of the waste management requirements. The DOH has conducted the trainings on the updated HCWM manual starting in February 2021. Training of personnel and clear procedures and guidance in the waste management plan are important to define the requirements and responsibilities on waste management.

IV. CONCLUSION

68. The Philippines has established a comprehensive and robust policy framework in regulating HCWM through laws and regulations that are being implemented by the DOH and the DENR. The fourth edition of the Health Care Waste Management Manual of the DOH presents a comprehensive set of guidelines on the safe management of waste generated from health care activities in the country. The manual incorporates the requirements of all Philippine laws and regulations governing HCWM, including immunization waste, and is aligned with international good practice as recommended by the WHO (footnote 4).

69. The Philippine National Deployment and Vaccination Plan for COVID-19 Vaccines and DOH Memorandum 2021-0031 – Interim Guidelines on the Management of Health Care Wastes Generation from COVID-19 Vaccination clearly define the immunization waste management requirements and guidelines to be observed by the HCFs and the regional offices to address issues of immunization waste management.

70. The DOH's implementation of the plan shows the government's commitment to ensure that incremental immunization waste is managed by the HCFs through the "duty of care" policy. The rollout by DOH of the trainings for implementers and the mobilization of a third-party DENR-licensed TSD service provider for the collection, treatment and disposal of immunization waste indicate the agency's commitment to ensure satisfactory immunization waste management in the framework of the implementation of COVID-19 vaccination program. The roles of the LGUs and the CHDs in the regions are crucial in the proper management and reporting of wastes and vaccine wastages.

71. DOH has outlined activities to continuously improve the waste management system through: (i) collaboration with the NVOC, Supply Chain Management Service, and Disease Prevention and Control Bureau on reverse logistics; (ii) coordination with the IWMI on monitoring and verification of actual treatment of COVID-19 vaccination wastes at the facility; and (iii) coordination with the Department of Information and Communications Technology to include monitoring data on reverse logistics. The DOH also committed to strengthen coordination with DENR who has developed an online hazardous waste monitoring and reporting system. The DOH is in the process of requesting for extension of the SPTT beyond 31 December 2021.

72. If in case the DENR denies the SPTT extension, the DOH will plan for the registration of the waste collection points at CHDs and PHOs as hazardous waste generators and as Category A TSD facilities for those employing onsite burial of vaccination wastes to comply with requirements of RA 6969. In addition, orientation training for CHDs and PHOs will be necessary to inform these facilities about the registration requirements, procedures, waste monitoring and reporting at the EMB's Online Hazardous Waste Management System.

Appendix A: Regional distribution of registered TSD Facilities for Health Care Waste in the Philippines

Region	Name of TSD Facility	Location	Type of HCW ^a	TSD Category ^b
NCR	Eco Safe Hazmat Treatment Inc.	Novaliches, Quezon City	M501	E
NCR	Integrated Waste Management, Inc.	Lung Center of the Philippines Compound, Quezon City	M501	B
NCR	Udenna Environmental Services, Inc.	Bagumbayan, Taguig City	M501 M503	B E
1	Servo-Treat Philippines, Inc.	Urdaneta City, Pangasinan	M501 M503	B E
3	Udenna Environmental Services, Inc.	Hermosa, Bataan	M501 M503	B E
3	Total Organic Environmental Solutions, Inc.	Pulilan, Bulacan	M501	B
3	Far East Fuel Corporation	San Ildefonso, Bulacan	M501 M503	B
3	Maya Med Waste Corporation	Marilao, Bulacan	M501	B
3	Glochem Marketing & Recycling Corp.	San Isidro, Nueva Ecija	M501 M503	B B, E
3	Safewaste Incorporation	Mabalacat City, Pampanga	M501	B
3	Metro Clark Waste Management Corporation	Capas, Tarlac	M501	C
3	Cleanway Environmental Management Solutions, Inc.	Capas, Tarlac	M501	B
3	Clean Leaf International Corporation	Bamban, Tarlac	M501	B
4A	Integrated Waste Management, Inc.	Trece Martirez City, Cavite	M501	B
4A	Cleanway Environmental Management Solutions, Inc.	Silang, Cavite	M501	B/F
4A	Pyrotech Solution and Integrated Services Corporation	Calamba, Laguna	M501	B
4A	Hazchem, Inc.	Calamba City, Laguna	M501	B
4B	Pollution Abatement Systems Specialists, Inc.	Puerto Princesa City, Palawan	M501	B
5	Zigs Eco Sanitation Corporation	Daraga, Albay	M501	B
7	Pollution Abatement Systems Specialists, Inc.	Cebu City, Cebu	M501	B
7	Medclean Management Solutions, Inc.	Cabancalan, Mandaue City	M501	B
7	Stellar Eco Solutions Corporation	Lapu-Lapu City, Cebu	M501	B
8	Allied Care Experts Medical Center	Tacloban City, Leyte	M501	A
8	Cleanaway Philippines, Inc.	Isabel, Leyte	M501	F
10	Stericycle Philippines Incorporated	Tagaloan, Misamis Oriental	M501	B
10	Philippine Sinter Corporation	Villanueva, Misamis Oriental	M501	A

CAR = Cordillera Administrative Region, NCR = National Capital Region, TSD = treatment, storage and disposal.

^a M501 - Pathological or infectious wastes; M503 - Pharmaceuticals and drugs.

^b A – Onsite Treatment and Disposal Facilities; B – Thermal Treatment Facilities; C – Disposal Facilities; D – Recycling Facilities; E – Chemical Treatment Facilities; F – Storage Facilities; G – Facilities that Decommission PCB-containing Equipment

Source: DENR-EMB. [List of Registered TSD Facilities as of August 31, 2021](#). Manila.

Appendix B: List of Waste Collection Points at CHDs and PHOs

Region	Waste Collection Point	Location	Contact Details
NCR	CHD	6 Barangay Road, welfareville Compound, Barangay Addition Hills, Mandaluyong City	6 Barangay Road, welfareville Compound, Barangay Addition Hills, Mandaluyong City
CAR	CHD	BGHMC Compound, Baguio City, Benguet	(074) 442-8096; 442-7591 chd_cordinllera@yahoo.com.ph
I-Ilocos	CHD	8 MacArthur Highway, Parian, San Fernando City, La Union	(072) 607-6413 dohro1.rd@gmail.com mlbello.chd1@gmail.com
II-Cagayan Valley	CHD	Carig Regional Center, Tuguegarao, Cagayan	(078) 304-6523; 304-6585 chdcvdoh@yahoo.com dohregionaloffice2@gmail.com
III-Central Luzon	CHD	Regional Government Center Park, Diosdado Macapagal Regional Center, Main Road San Fernando, Pampanga	(045) 8613-425 to 29 rd@centralluzon.doh.gov.ph ard@centralluzon.doh.gov.ph
IV-A-CALABARZON	PHOs	<p>Provincial Health Office-Cavite Cavite Collaboration Center for Public Health, Gen. Emilio Aguinaldo Memorial Hospital Compound, Brgy. Luciano, Trece Martires City</p> <p><u>Provincial Health Office-Laguna</u> J.De Leon St., Santa Cruz, Laguna</p> <p><u>Provincial Health Office-Batangas</u> Roxas Rd., Kumintang Ibaba, Batangas</p> <p><u>Provincial Health Office-Rizal</u> M. Santos St., Antipolo City, Rizal</p> <p>Provincial Health Office-Quezon <u>Quezon Avenue, Lucena, Quezon Province</u></p>	<p>Provincial Health Office-Cavite (46) 419-2333 phtocavite@yahoo.com.ph pho@cavite.gov.ph phocavite_technical@yahoo.com <u>Provincial Health Office-Laguna</u> (049) 501-4716, 501-1630 phtolaguna@yahoo.com.ph</p> <p><u>Provincial Health Office-Batangas</u> (043) 575-4767, 723-3285, 723-0894 ro4a.batangaspdoho@gmail.com <u>Provincial Health Office-Rizal</u> (8) 652-5609, (02) 874-8301 chd4a_doh_rizaleo@yahoo.com</p> <p>Provincial Health Office – Quezon (042) 373-1514 Cht.quezon@gmail.com Quezon.pho@gmail.com</p>
IV-B-MIMAROPA	PHOs	<p>Provincial Health Office-Occidental Mindoro Old Provincial Hospital Compound, Ilaya, Calapan</p> <p>Provincial Health Office-Oriental Mindoro Mamburao, Ocidental Mindoro</p> <p><u>Provincial Health Office-Marinduque</u></p>	<p>Provincial Health Office-Occidental Mindoro 0918-918-5814, (043) 288-5130</p> <p>Provincial Health Office-Oriental Mindoro (043) 711-1116</p> <p><u>Provincial Health Office-Marinduque</u> (042) 332-0433</p>

Region	Waste Collection Point	Location	Contact Details
		Santos St., Boac, Marinduque <u>Provincial Health Office-Romblon</u> Bldg. 1, RPH Compound, Brgy. Liwanag, Odiongan, Romblon <u>Provincial Health Office – Palawan</u> Prim Building, Peo Road, Sps Government Center, Puerto Princesa, City, Palawan	<u>Provincial Health Office-Romblon</u> 567-5321 <u>Provincial Health Office – Palawan</u> (408) 434-9996
V-Bicol	CHD	Bagtang Road, Legazpi, Albay	(052) 204-0040, 204-0050, 204-0090 Bicoldoh@gmail.com Chd_bicol@yahoo.com.ph Chd5_ard@yahoo.com
VI-Western Visayas	CHD	Q. Abeto, Mandurriao, Iloilo City	(033) 332-2329, 321-1036, 332-2326 dohro6rdo@gmail.com
VII-Central Visayas	CHD	Osmeña Blvd, Cebu City	(032) 253-6355, 418-7130, 254-0109 Dohro7@gmail.com
VIII-Eastern Visayas	CHD	Candahug, Palo. Leyte	(053) 323-5027 Xbsdoh@gmail.com , dog.region08@gmail.com
IX-Zamboanga Peninsula	CHD	Labuan-Limpapa National Road, Zamboanga, Zamboanga de Sur	(062) 983-0934, 992-2745, 991-3380 Dohchdzp@yahoo.com
X-Northern Mindanao	CHD	J.Seriña St., Cagayan de Oro, Misamis Oriental	(088) 858-7123, 858-2035, 22-727-400 Dohro10@gmail.com adrian58us@yahoo.com
XI-Davao	CHD	JP Laurel Ave, Buhangin, Davao City, Davao de Sur	(082) 305-1903; 305-1904; 305-1906; 227-4073; 227-2463 annabelle.yumang@lycos.com Doh11davao@gmail.com
XII-Soccsksargen	CHD	ORG Compound, Gov. Gutierrez Ave., RH VII, Cotabato City	(064) 557-4844; 4421-2373, 421-4726 Doh_chd12@yahoo.com rdofficedoh12@yahoo.com
XIII-Caraga	CHD	Pizarro-Narra Streets, Butuan, Agusan del Norte	(085) 342-5208, 225-2970 Dohro13caraga@gmail.com
BARMM	PHOs	Provincial Health Office-Lanao del Sur Marawi City, Lanao del Sur Provincial Health Office-Lanao del Norte Pigcarangan, Tbod, Lanao del Norte, Tubod Provincial Health Office-Maguindanao Old Provincial Capitol, Don Teodoro V. Juliano Avenue Cotabato City	Provincial Health Office-Lanao del Sur 0939-643-7206 Jhamjoomsarip@yahoo.com Provincial Health Office-Lanao del Norte 09776240667, (063) 341-5241, 341-5345 Information_ldn@yahoo.com Provincial Health Office-Maguindanao (064) 278-7014

Region	Waste Collection Point	Location	Contact Details
		Provincial Health Office-Basilan Capitol Building, Isabela City, Basilan Provincial Health Office-Sulu Asturias St., Jolo, Sulu	Provincial Health Office-Basilan admin@basilan.gov.ph Provincial Health Office-Sulu (085) 341-8911

CHD = Centers for Health, PHO = Provincial Health Office.

Source: Asian Development Bank.

Appendix C: Monitoring Framework for Covid-19 Immunization Waste Management

Activity/Target	Objectively Verifiable Indicators	Means of verification	External Factors (Assumptions)	Responsible Units	Timeframe
EHS Objective 1: Environment and human health preserved and protected					
1.1 Delivery, distribution and actual dosing of COVID-19 vaccines will result to increased quantity of hazardous health care wastes produced (e.g. sharps, unused and used vials, expired vaccines and ancillaries, PPEs, etc.) anywhere in between the end-to-end supply chain. While priority populations are safely vaccinated against COVID-19, the wastes produced in the process should not have a deleterious effect on the environment.	1.1.1 Zero environmental complaints	Records/reports from DENR-EMB and/or local environment and natural resources office (PENRO/CENRO/MENRO)	Complaints are valid and were validated by DENR-EMB and/or local environment and natural resources office	DOH, National/Regional/Local VOCs, Sanitary Engineers/Inspectors, Vaccination Site Supervisor	Starting Q3'2021 - quarterly validation
	1.1.2 Zero adverse environmental incident occurrence	Records/reports from DENR-EMB and/or local environment and natural resources office (PENRO/CENRO/MENRO)	Any adverse environmental incidents caused by COVID-19 vaccination wastes have been reported by concerned parties/individuals	DOH, National/Regional/Local VOCs, Sanitary Engineers/Inspectors, Vaccination Site Supervisor	Starting Q3' 2021 - quarterly validation
1.2 Exposure of people to COVID-19 immunization wastes poses threat to safety and health particularly of those of waste handlers, health care workers, and patients. Exposure to these wastes should be minimized and only those that are trained and appointed as COVID-19 vaccination waste handlers should have an access to these wastes and their storage areas.	1.2.1 Zero health incidents reported as a result of exposure to COVID-19 vaccination wastes	Records/reports from the local Vaccination Operations Center (VOC), RHO/CHO, PHO, CHD	Any health incidents caused by COVID-19 immunization wastes have been reported by concerned parties/individuals	DOH, National/Regional/Local VOCs, Sanitary Engineers/Inspectors, Vaccination Site Supervisor	Starting Q3'2021 - quarterly validation
	1.2.2 Zero safety related incidents reported	Records/reports from the local Vaccination Operations Center (VOC), RHO/CHO, PHO, CHD	Any safety incidents caused by COVID-19 immunization wastes have been reported by concerned parties/individuals	DOH, National/Regional/Local VOCs, Sanitary Engineers/Inspectors, Vaccination Site Supervisor	Starting Q3'2021 - quarterly validation
EHS Objective 2: COVID-19 vaccination wastes properly managed					

Activity/Target	Objectively Verifiable Indicators	Means of verification	External Factors (Assumptions)	Responsible Units	Timeframe
2.1 Efficient and effective control and management of vaccines to prevent wastage due to: Unused doses (expired, or no label) Spoilage (damaged due to wrong temperature) Broken vials during handling and transport Others (destroyed by fire, missing inventory, etc)	2.1.1 Maintain 1% or less Vaccine Wastage Rate in Unopened and Opened Vials in CHDs, LGUs, and Vaccination Sites at country level (total accumulated wastage vs total qty delivered to the CHDs and LGUs, for all vaccines regardless of source of funding)	Summarized Form A, Vaccine Information Management System (VIMS), Reports from NVOC and SCMS	Rapid roll-out of vaccines to the vaccination sites from the Central Storage Facility to the CHDs and LGUs. Wastage took place at the CHD, LGUs, and Vaccination Sites. Wastage are for both open and unopened vials. Regular monitoring and reporting of data of vaccine wastage. Established waste monitoring system on-site.	DOH, National/Regional/Local VOCs, Implementing Units, Vaccination Sites, 3PL Service Provider	Starting September 2021, monthly validation
2.2 Development of a waste management plan for the wastes COVID-19 vaccination wastes during distribution, deployment, actual dosing, collection, transport, treatment, and final disposal.	2.2.1 At least 90% of sampled HCFs (Vaccination Sites, RHUs/CHOs, CHDs) in the country has developed a waste management plan for COVID-19 immunization wastes	Survey reports from logistics team Survey reports on the waste management of HCF Copies of the actual waste management plan	Acceptable number of samples have been surveyed based on statistical analysis.	DOH, PCO/Waste Management Officer, Sanitary Engineer/Inspector, Regional EH Coordinator	Starting Q3'2021 - quarterly validation
2.3 Proper waste segregation at the point of use	2.3.1 Maximum of 20 vials per resealable plastic bag	Records from the local VOC Actual studies/surveys conducted	Constant sizes of resealable plastic bags Constant supply of resealable plastic bags	DOH, LGU, Vaccination Team	Starting Q4'2021 - quarterly validation
2.4 Designation of PCO or Waste Management Officer to supervise and coordinate COVID-19 vaccination waste management planning and its subsequent implementation	2.4.1 At least 90% of sampled HCFs (Vaccination Sites and temporary storage areas at LGU and CHD levels) in the country have at least one designated PCO or Waste Management Officer (Vaccination Site Supervisor, Sanitary	Survey reports on the waste management of HCF DENR accreditation certificate of the PCO Training certificates of the PCO/Waste Management Officer TOR of Waste Management Officer	On-time and continuous approval of DENR EMB of new PCOs	DOH, LGU, Highest official of the HCF	Starting Q4'2021 - quarterly validation

Activity/Target	Objectively Verifiable Indicators	Means of verification	External Factors (Assumptions)	Responsible Units	Timeframe
	Engineer/Inspector, Regional EH Coordinator) for the management of vaccination wastes				
2.5 Proper storage onsite based on the requirements of DOH and DENR	2.5.1 At least 90% of sampled HCFs in the country have a proper onsite storage of COVID-19 immunization wastes based on the requirements of DOH and DENR.	Survey reports on the waste management of HCF Photos of storage facilities	Acceptable number of samples have been surveyed based on statistical analysis	DOH, LGU, PCO/Waste Management Officer, Sanitary Engineer/Inspector, Regional EH Coordinator	Starting Q4'2021 - quarterly validation
2.6 Transport and treatment of immunization wastes based on DENR's licensing, reporting, and monitoring requirements through the existing Hazardous Waste Management System (HWMS)	2.6.1 At least 90% of DOH-identified COVID-19 waste collection points have initiated the registration to HWMS system as prerequisite for the hazardous waste generator's ID	Screenshot of the online account in the HWMS system	HWMS online system should be properly working in the specified locations for COVID-19 waste collection points PCOs or the Waste Management Officers of the HCFs have proper knowledge and training on the use of HWMS online system.	DOH, PCO/Waste Management Officer, Sanitary Engineer/Inspector, Regional EH Coordinator	Starting Q4'2021 - quarterly validation
2.7 Ensure proper treatment and final disposal of immunization wastes by the DOH contracted Treatment, Storage, and Disposal (TSD) Facility	2.7.1 At least 90% of wastes received in the TSD Facility have been treated based on the DENR accepted processes within 45 days from the receipt of the wastes	Results of actual verification of the TSD Facility's performance and compliance with DOH and DENR requirements Certificates of Treatment (COT) issued Certificates of Final Disposal issued	DOH has contracted a DENR-accredited Treater Acceptable number of samples have been surveyed based on statistical analysis	DOH, PCO/Waste Management Officer, Sanitary Engineer/Inspector, Regional EH Coordinator	Starting Q3'2021 - quarterly validation
	2.7.2 Central treatment facility of contracted third-party service provider complies with emission standards	Results of periodic monitoring of the central treatment facility through quarterly Self-Monitoring Reports (SMRs), semi-annual Compliance Monitoring Reports (CMRs), results of dioxins and furans monitoring, and emission tests	DENR-accredited sampling company conducts regular emission level monitoring at treatment facility of contracted third-party service provider	DOH, PCO/Waste Management Officer, Regional EH Coordinator	Starting Q4 2021 – Annual for dioxins and furans; Semi-annual for SOx, NOx, PM, etc.

Activity/Target	Objectively Verifiable Indicators	Means of verification	External Factors (Assumptions)	Responsible Units	Timeframe
2.8 Ensure safe treatment and final disposal onsite for HCFs located in remote and far-flung areas and with no access to TSD Facilities in compliance with DOH Health Care Waste Management Manual	2.8.1 At least 90% of sampled HCFs located in remote and far-flung areas and with no access to TSD Facilities are properly implementing the safe and compliant treatment and final disposal processes onsite (e.g. septic vaults)	Survey reports on the waste management of HCF Actual photographs of onsite treatment and final disposal facilities of the HCF Records of inventory of immunization wastes disposed on-site	Acceptable number of samples have been surveyed based on statistical analysis	DOH, PCO/Waste Management Officer, Sanitary Engineer/Inspector, Regional EH Coordinator	Starting Q4'2021 - quarterly validation
EHS Objective 3: ADB Safeguards complied					
3.1 Ensure that the storage, treatment and disposal of COVID-19 immunization wastes will not require any land acquisition or lead to any resettlement impacts.	3.1.1 Zero occurrence of land acquisition resulting to involuntary resettlement	Reports from DOH, DENR, LGU and CHD	Updated reporting of information to DOH, DENR, LGU and CHD	DOH, DENR, LGU, CHD, DOH accredited Transporter/Tr eater	Starting Q3'2021 - quarterly validation
3.2 Ensure that the overall management of COVID-19 vaccination wastes from generation until final disposal will not have a direct or indirect impact on the health and safety of Indigenous Peoples as well as on their ancestral domain or asset.	3.2.1 Zero health incidents reported as a result of exposure of IPs to COVID-19 vaccination wastes	Reports from the National Commission on Indigenous Peoples (NCIP), LGU and CHD	Updated reporting of information to NCIP, LGU, and CHD	DOH, NCIP, LGU, CHD, DOH accredited Transporter/Tr eater	Starting Q3'2021 - quarterly validation
	3.2.2 Zero safety related incidents reported as a result of exposure of IPs to COVID-19 vaccination wastes				
	3.2.3 Zero acquisition of IP's ancestral domain or assets to be used as storage, treatment or disposal facility for COVID-19 immunization wastes				

CHD = Center for Health Development, CMR = compliance monitoring report, COT = certificates of treatment, COVID-19 = corona virus, DENR = Department of Environment and Natural Resources, DOH = Department of Health; HCF = health care facilities, HWMS = hazardous waste management system, LGU = local government unit, NCIP = National Commission on Indigenous Peoples, PCO = Pollution Control Officer, PHO = Provincial Health Officer, Q = quarter, RHU = rural health units, TSD = transporter, storage and disposal, VOC = vaccination operations centers
Source: Asian Development Bank.