Government of Nepal
Ministry of Health and Population

World Health Organization
COUNTRY OFFICE FOR Nepal

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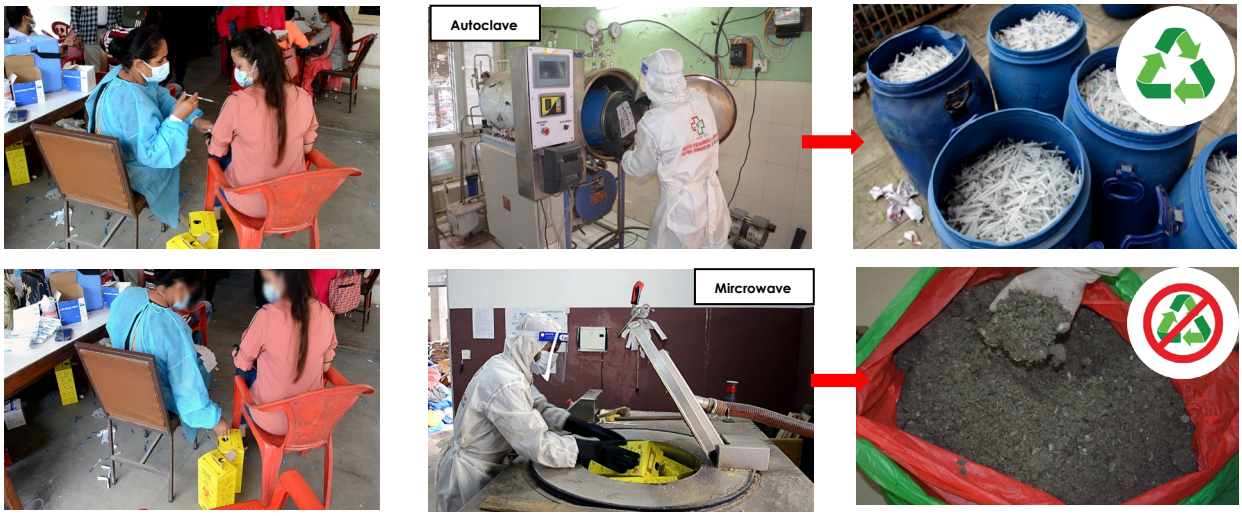
SAFE MANAGEMENT OF THE HAZARDOUS WASTE GENERATED AND STORED AS RESIDUAL WASTE IN THE VACCINE CENTERS OF KATHMANDU VALLEY DURING COVID-19 VACCINATION CAMPAIGN

Final Report



Submitted to:

Family Welfare Division
Department of Health Services
Ministry of Health & Population
Teku, Kathmandu, Nepal

WHO Country Office Nepal
UN House,
Pulchowk
Lalitpur, Nepal

Submitted by:

Health Environment Climate and
Action Foundation (HECAF 360)
Kathmandu, Nepal

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HEALTH ENVIRONMENT & CLIMATE ACTION FOUNDATION

hecaf 360

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Acknowledgements

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Sincerely,
Mahesh Nakarmi
Executive Director
Health Environment Climate Action Foundation (HECAF 360)

Acronyms and Abbreviation

APF	Armed Police Force
COVID 19	Coronavirus disease of 2019
CSH	Civil Service Hospital
DoHS	Department of Health Services
FWD	Family Welfare Division
HECAF 360	Health Environment Climate Action Foundation
InCoV	novel corona virus
kg	Kilogram
MoHP	Ministry of Health and Population
NDVP	National Deployment and Vaccination Plan
PMWH	Paropakar Maternity and Women's Hospital
psi	Pound per square inch
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SCBI	Self-Contained Biological Indicator
SOP	Standard Operating Procedures
STIDH	Sukraraj Tropical and Infectious Disease Hospital
WHO	World Health Organization

List of Figures

1. Background

Health care waste is a by product of health care including vaccination campaign. Ongoing COVID-19 vaccination campaign is generating hazardous waste, which includes sharps like syringes and vials both empty and non-empty or some residual of vaccine, expired vaccine, blood contaminated items like cotton, cotton gauze, personal protective items like gloves and masks etc. Poor management of health care waste exposes health care workers, waste handlers, patients and their families and the community to preventable infections and or physical injuries. For safety of people and clean environment, public health service act 2075, National health policy 2076 and Public health regulation 2077 have ensured safe management of all kinds of waste generated during health services. Based on those documents, Nepal Government has recently introduced the "National health care waste management standards and operating procedure -2020, with clear technical guidelines to be followed in the health care waste management including the waste generated from the vaccination campaign activities.

In early 2021, Nepal's Ministry of Health and Population (MoHP) submitted the National Deployment and Vaccination Plan (NDVP). According to the plan enough doses to vaccinate 20% of the population at highest risk of COVID-19 disease and death through the COVAX Facility was to be secured. Under the first COVAX allocation, the COVAX Facility delivered 348,000 doses as a first portion to the country in March 2021. While Government of Nepal has also proactively secured additional 2.8 million doses of COVISHIELD and SARS-CoV-2 Vaccine (Vero Cell), Inactivated (InCoV) through diplomatic negotiations and direct procurement.

Nationwide vaccination campaign started at the end of January 2021 with operational committees and task forces formed at all levels - federal, province, districts, and local level (palika, municipality). These committees and task forces were a leveraged existing immunization coordination committee that exists at all levels, which were expanded as per need for COVID-19 vaccination response. Nepal launched the COVID-19 vaccination campaign on 27 January 2021 and so far, has delivered 2.48 million vaccine doses vaccinating 6.95% of the total population with the first dose, and 1.2% with the second dose of COVID-19 vaccines. At first, based on the NDVP, health and social sector and front-liners (first priority group) were vaccinated achieving 86% coverage. Following this, people over 65 years old throughout the country and those over 55 years old in all high mountainous terrain districts were vaccinated, achieving 77% coverage (preliminary data). Recently, the first priority group have also been provided second dose of the vaccine.

Based on its robust routine immunization system and experience of conducting nation-wide mass vaccination campaigns, and proactive vaccine acceptance in the community at large, Nepal has safely and successfully demonstrated rapid roll out of COVID-19 vaccination. However, the health care waste resulting from the vaccination program had not been thoroughly worked out. The vaccine waste i.e. used syringes are directly collected in the safety boxes. Mishandling of these boxes can cause needle stick injuries and haphazard disposal might cause risk to both public and environment health.

Safe management of health care waste involves three key principles: reduction of unnecessary wastes, separation of general waste from hazardous wastes and waste treatment and safe disposal that reduces risks to health workers and community. Additionally, an improper disposal of these types of wastes can cause higher chances of mechanical injuries to scavengers and can trigger serious environmental and biological hazard. Pollution due to inadequate treatment like open burning of these wastes can cause indirect health effects in the community and impact the environment. A waste management plan requires a partnership with a hospital which has its own waste management capacity. However, until this arrangement is finalized and implemented, the vaccination wastes have no way to be dispose.

2. Objective

The main objective of the assignment is to clear out the sharp wastes (safety boxes) collected in the vaccination sites for COVID-19 operated in Kathmandu Valley and safely store the collected waste. Until the arrangement of partnership with a hospital having its own waste management is finalized, the waste collected in these vaccination sites will be transferred and safely stored. Furthermore, the stockpiled waste will be collected in puncture proof containers and testing indicators will also be included so that proper disinfection of collected waste will be ensured.

The overall objective of the assignment is as follows:

- To safely transfer vaccine waste from the vaccination sites for COVID-19 to safe storage
- To disinfect and dispose sharp waste collected from the vaccination sites for COVID-19

3. Preparatory Work

a. Preparatory visit and meetings

Some of the vaccination sites operated in health posts were visited to assess the situation of vaccine waste being stored after the vaccination campaign. Similarly, series of meetings were conducted with the stakeholders like Family Welfare Division, Sukraraj Tropical and Infectious Disease Hospital, Civil Service Hospital and Paropakar Maternity and Women's Hospital for smooth execution of the planned activities.

b. Information Collection

The staff supervising health unit in 21 municipalities in Kathmandu Valley were coordinated for collecting details of the amount and quantity of vaccine waste (safety boxes) being stored at the vaccination sites.

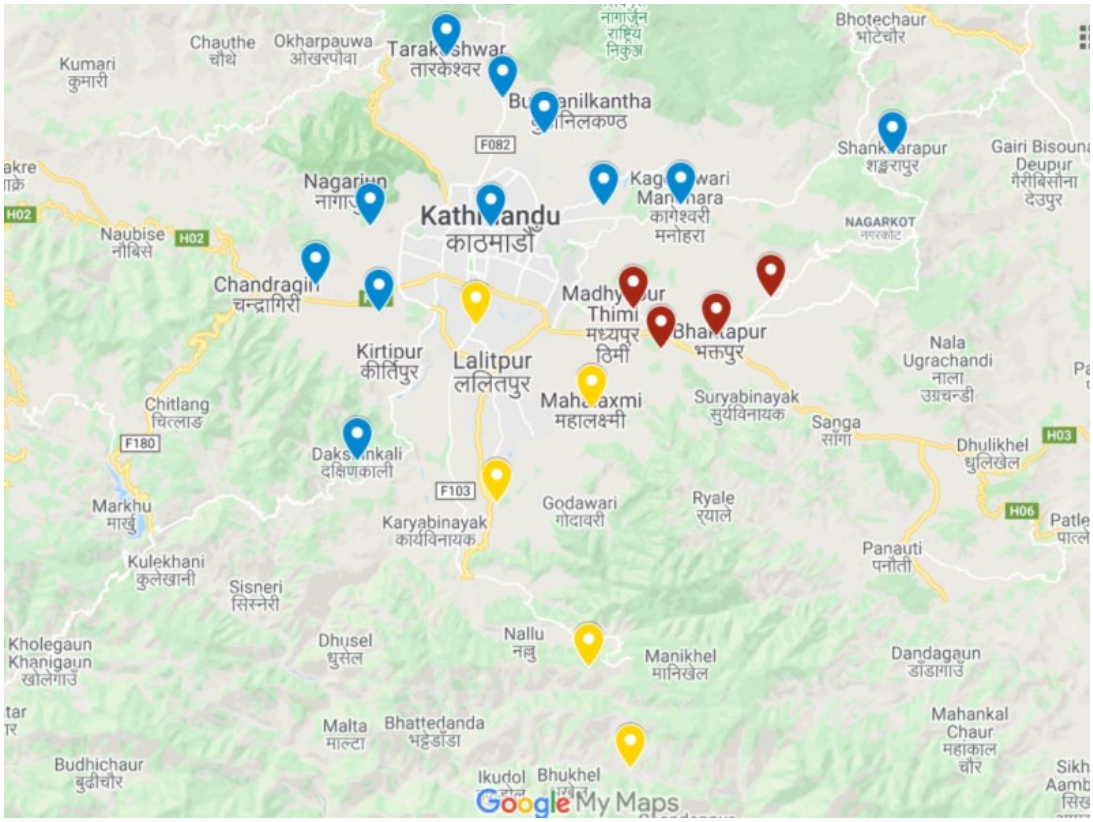


Figure 1. Municipalities contacted in Kathmandu Valley

c. Finalizing SOP to collect and transfer vaccine waste

An SOP was drafted to safely collect the vaccine waste in the bio hazard drums. A trial session with fake waste (unused syringes and safety boxes) was conducted. The SOP was revised according to the feedback received during the trial session. The SOP was reviewed and the final version was used as a guide for the transfer. Please refer to the annex for the SOP.

d. Identify a suitable location for the safe storage of the waste

A warehouse located nearby the tentative hospital (i.e. Sukraraj Tropical and Infectious Disease Hospital) with its own waste treatment center, having low flow of public was hired for storage. All the waste collected from the vaccination sites were stored in this particular warehouse.

e. Identify sites for safe disposal

As per the national guideline on health care waste management the collected vaccine waste had to be disposed in a waste management system based on non-incineration. Hospitals with full-fledged waste treatment center which can safely dispose the collected vaccine waste were explored. Three hospitals (Civil Service Hospital; Nepal APF Hospital; and Sukraraj Tropical and Infectious Disease Hospital) with such system were identified for disposal of the collected waste.

f. Coordination from Family Welfare Division

Letter for coordination with the vaccination sites, municipalities etc. was provided by Family Welfare Division, Department of Health Services to inform about the safe collection of the vaccine waste. Likewise, another letter was issued to the proposed hospitals (Civil Service Hospital; Nepal APF Hospital; and Sukraraj Tropical and Infectious Disease Hospital) which had their own waste management system. So that the collected vaccine waste are safely disinfected and safely disposed. Please refer to the annex for the letters provided. However, due to the technical difficulties disposal at Sukraraj Tropical and Infectious Disease Hospital was not possible. Later Paropakar Maternity and Women's Hospital was also coordinated to facilitate for the disposal of the collected vaccine waste.

g. Schedule and Route Plan

A schedule was developed to collect and transfer the vaccine waste from various vaccination sites in 21 municipalities in Kathmandu, Bhaktapur and Lalitpur district. Please refer to the annex for detailed plan

h. Equipment Management

For accomplishing the task, equipment required like Personal Protective Equipment (Full coverage reusable gowns, working gloves, eye protectors, masks, and face shield), bio-hazard drums, long forceps and sanitizers were provided through WHO. While testing indicators like SCBI, Chemical Indicator, and Autoclave tape were purchased by HECAF 360. Moreover, other necessary equipment like incubator, stand with needle cutter were arranged by HECAF 360.

i. Preparation of Labels

Labels denoting the contents in the bio-hazard drum were especially designed. Each label also had unique code so that the vaccine waste being collected could be easily tracked. Special instructions were also included in the label which restricted handling of the drums by unauthorized personnel.

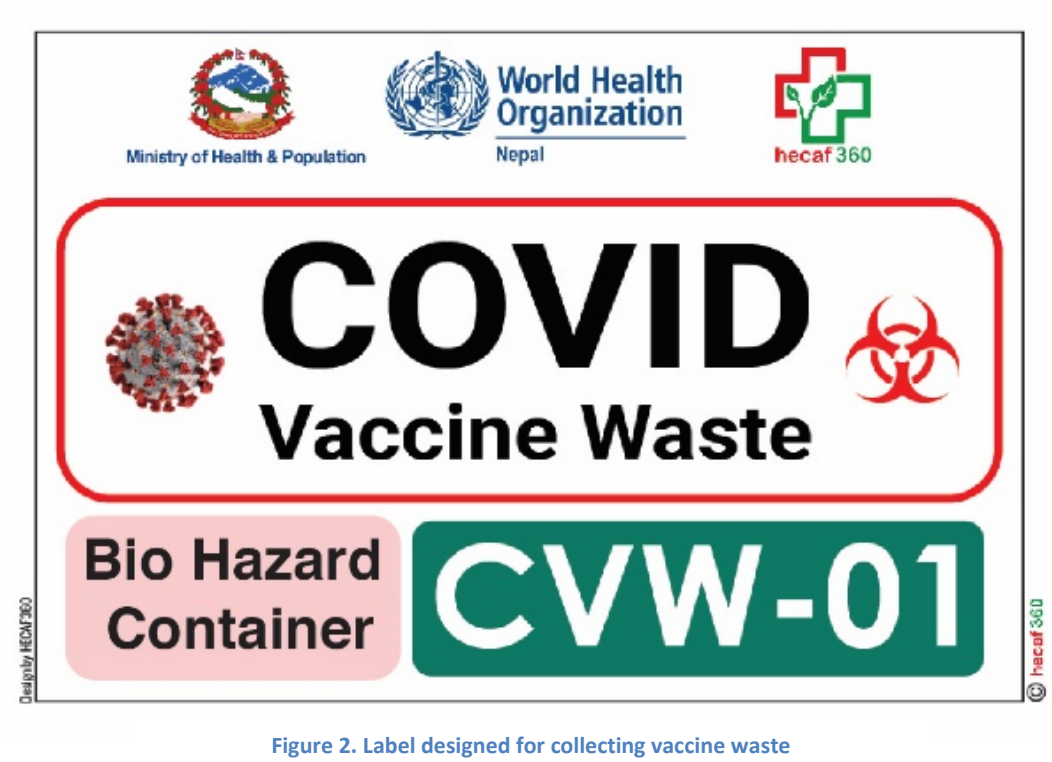


Figure 2. Label designed for collecting vaccine waste

Figure 3. Label with special instruction

j. Trial Testing Session

An SOP was drafted and a trial session with fake waste (unused syringes and safety boxes) was conducted. The SOP was revised according to the feedback received during the trial session. The SOP was reviewed and the final version was used as a guide for the transfer. Please refer to the annex for the SOP.

Figure 9. Inspecting safety box

Figure 9. Opening safety box step by step

Figure 9. Safety box containing fake syringe

Figure 9. Pouring sharp waste into the biohazard drum

Figure 9. Placing HDPE pipe for placing testing indicators

Figure 9. Sealing the biohazard drum

4. Field work

a. Vaccine Waste Collection

According to the schedule developed the respective focal person in the municipality and vaccination sites were contacted via phone. Prior information on estimated number of collected safety boxes was gathered. According to the total number of safety boxes available detailed route plan was formulated and equipment required was prepared.

Figure 11. Vaccine waste collected at Kathmandu DPHO

Figure 10. Safety box containing sharp waste

Figure 13. Transferring sharp waste to biohazard drum

Figure 12. Biohazard drum 3/4th full

Figure 15. Vaccine waste transferred into the biohazard drums

Figure 14. Transporting the biohazard drums to the warehouse

b. Collection and Transferring of vaccine waste Collection of Vaccine Waste

According to the SOP developed the vaccine waste were safely transferred into the puncture proof biohazard drums. All possible safety measures were considered while conducting the task.

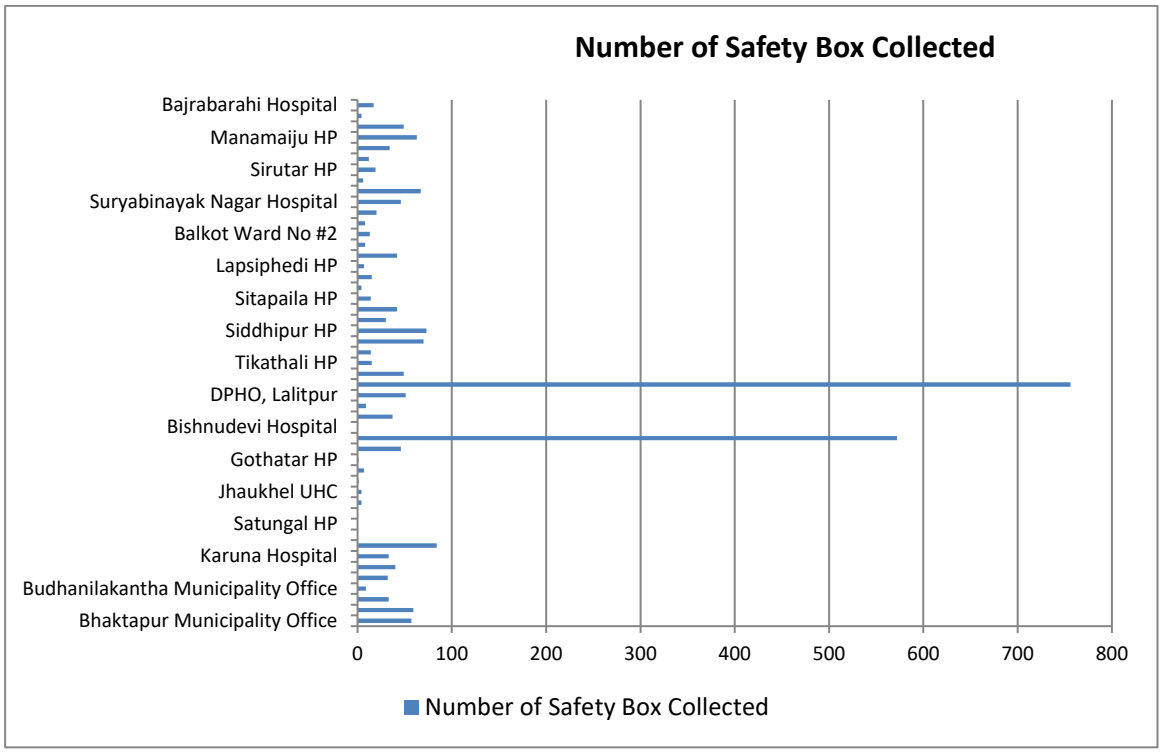


Figure 16. Total number of safety boxes collected in Kathmandu Valley

A total of 3,361 safety boxes were collected. Altogether 45 bio-hazard drums of 80 liter capacity were used to accommodate 956 safety boxes of the vaccine waste collected. Remaining vaccine wastes i.e. 2405 safety boxes were collected in thick paper box collected.

c. Safe Storage of stockpiled waste in designated warehouse

All collected vaccine waste were stored in a warehouse for safe storage until liaison with a health care facility having its own waste management system based on non-incineration treatment were finalized.

The stored waste were than dispatched in various schedule to Paropakar Maternity and Women's Hospital and Civil Service Hospital for further processing.

Figure 17. Bio-hazard drums stored in the warehouse

Figure 18. Securing warehouse from entry of unauthorized personnel

d. Disinfection and Disposal of Vaccine Waste at Civil Service Hospital

A non-incineration technology i.e. microwave with shredder has been installed at Civil Service Hospital. The hospital has been disposing its infectious and sharp waste via this method.

The machine can dispose 20 kg of mixed waste (paper, plastic, sharp glass, sharp metal) in a single cycle. Loading of pre weighed mixed waste needs to be manually loaded into the machine. After the door of the machine is safely locked, first step in the disposal process is grinding of the loaded waste. Then after, heating and sterilization process begins using microwave solution. After completion of the sterilization process, grinded and sterilized waste is transferred into the container ready for disposal. The volume of waste loaded in the machine is reduced and the waste is unrecognizable and inert.

Figure 19. Safety boxes containing vaccine waste for disposal at CSH

Figure 20. Quantifying waste to be disposed

Figure 21. Waste loaded in the microwave with shredder

Figure 24. Closing the door of the microwave for disposal

Figure 22. Screening showing the duration of cycle remaining

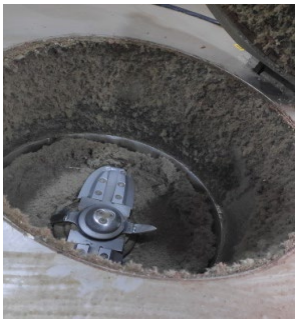


Figure 23. Remains of waste after ending of the cycle

Figure 27. Dusting off the remaining waste

Figure 25. End product after disinfecting in the microwave with shredder

Figure 26. Disposal of the non-recyclable waste in municipal stream

The collected 2405 safety boxes containing vaccine waste were disposed using the same method. Please refer to the annex for details of disposal via microwave

e. Disinfection of Vaccine Waste at Paropakar Maternity and Women's Hospital

It was agreed that the waste would be treated at the hospitals that have established and well-functioning waste management system with a well-functioning autoclave. However, due to technical difficulty, proper disinfection of collected vaccine was not possible at Sukraraj Tropical and Infectious Disease Hospital. Later, Paropakar Maternity and Women's Hospital was approached for conducting the activity.

- Preparation

As per the agreement with hospital management team, after 15:00 pm autoclaving was initiated from 9 August 2021. Along with the autoclave operators at Paropakar Maternity and Women's Hospital the vaccine waste were disinfected. Necessary data of weight of waste being treated, timing were recorded in a standard format developed by HECAF 360.

Figure 28. Quantifying vaccine waste for disinfection at PMWH

Figure 29. Insertion of testing indicators between the vaccine waste

Figure 30. Securing spillage of syringes with wire mesh

Figure 31. Loading the bio-hazard drum in pre-vacuum autoclave for disinfection

For ensuring the proper disinfection of the waste, space within the bio-hazard drum was created to insert testing indicators.

- Insertion of Testing Indicators

In each cycle of autoclaving to ensure the proper and efficient autoclaving processes, three level of testing indicators were used and their respective results were also noted.

For ensuring proper disinfection of the vaccine waste, following results of the testing indicators were taken into consideration:

Indicators	Autoclave tape	Chemical Indicator (moving front)	Biological Spore
Before autoclaving			
After autoclaving			

*Pass: If all the standard results are achieved.

*Fail: If one of the standard results are not achieved.

- Sterilization
  For ensuring proper sterilization of the vaccine waste the opening of the biohazard drum was closed with a wire mesh so that steam could penetrate inside the waste and reach the most difficult part of the container. As the autoclave machines were pre validated the sterilization was conducted in the set parameters i.e. 15 psi pressure, 121 °C temperature and 20 minutes sterilization time

- Monitoring of Testing Indicators

After completion of the complete cycle, the bio hazard drums were unloaded and testing indicators were retrieved. After the confirmations of testing results i.e. pass result, the treated vaccine wastes were forwarded for mutilation and quantification process.

Figure 32. Incubating SCBI for checking growth of high temperature resistant bacterial spores

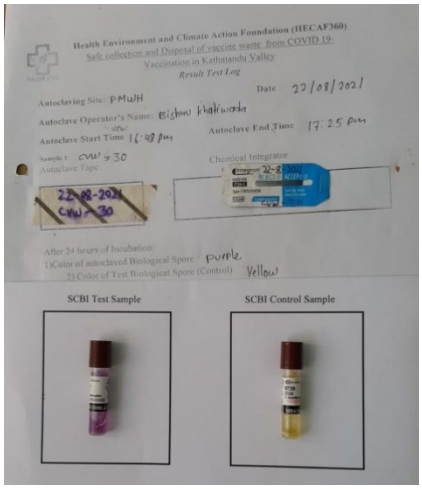


Figure 33. Autoclave test log with record of all testing indicators

A total of 69 cycles of disinfection was carried out. During autoclaving, there were several fail results. The failed testing results were re-autoclaved until all test results were "pass" result the waste from drums were separated. The autoclave log and test result were recorded in the standard formats developed by HECAF 360.

f. Mutilation of Syringes

After the confirmation of testing results i.e. pass result of SCBI, the treated vaccine waste poured into a container with wider opening. A waste handler equipped with full set of personnel protective equipment grabbed a syringe with help of a long forcep. The syringe was then cut using a manual needle cutter up to the hub of the syringe so that the syringe could no longer be reused and possible needle stick injuries were prevented. After the syringe was cut the plastic portion was quantified as the plastic has higher recycling value.

Figure 34. Waste handlers cutting syringes

Figure 35. Mutilating syringes using manual needle cutter

g. Quantification of Waste

All the waste after the confirmation of test results, especially SCBI is pass, waste were quantified according to their recyclable value.

h. Monitoring of Vaccine waste disinfection and disposal

On 14 June 2021, Dr. Sudan Raj Panthi, National Program Officer, WHO Nepal visited Civil Service Hospital for initiating and monitoring of the disposal of vaccine waste. During the visit, he observed the detailed process of microwave operation including preparation of waste to be disposed, loading of the waste. During his visit, he also discussed about handling of waste as well as safety measures undertaken by operators and waste handlers.

Figure 36. Discussing the steps of disinfection at CSH

Figure 37. Observing the disposal process via microwave with shredder

Similarly, on 10 August 2021, Dr. Sudan Raj Panthi, National Program Officer, WHO Nepal visited Paropakar Maternity and Women's Hospital for monitoring of the disinfection and disposal process conducted. During the visit, he observed the detailed process of waste disinfection including preparation of autoclave testing indicators (autoclave tape, chemical indicator and biological spores), insertion of testing indicators, process of waste disinfection, result of testing indicators, needles being mutilated, storage of recyclable items. During his visit, he also discussed about effectiveness of waste autoclaved as well as safety measures undertaken by autoclave operators and waste handlers.

Figure 38. Dr. Sudan Panthi observing mutilation of syringes

Figure 39. Discussion on the disinfection process at PMWH

5. Conclusion

Vaccine waste (3361 safety boxes)collected in various vaccination sites operated in Kathmandu valley were safely collected, transferred, disinfected and disposed be HECAF 360. The safety boxes containing vaccine waste were first transferred into bio-hazard drums. While some safety boxes were directly collected. All the collected vaccine waste were stored in a warehouse until an agreement with hospital capable of managing health care waste was achieved. The collected vaccine waste were disinfected and disposed via two technologies (microwave with shredder and pre-vacuum autoclave).

Disposing waste via microwave with shredder was very quick and easy. While the waste items like paper, plastic were turned into unrecognizable municipal waste. Recycling after disinfection of the waste was not possible.

However, while disinfecting the vaccine waste in a pre-vacuum autoclave took longer time. All the recyclable items were recovered after achieving proper disinfection of the waste. Mutilation of syringes was ensured before handing over to the scrap dealer. Even though, the cost recovered via recycling was negligible waste ending at the landfill site waste reduced.

Associated risk to the waste handler existed in both the methods.

6. Recommendation

- A full functioning health care waste management system with the following components should be implemented in all of the vaccination sites

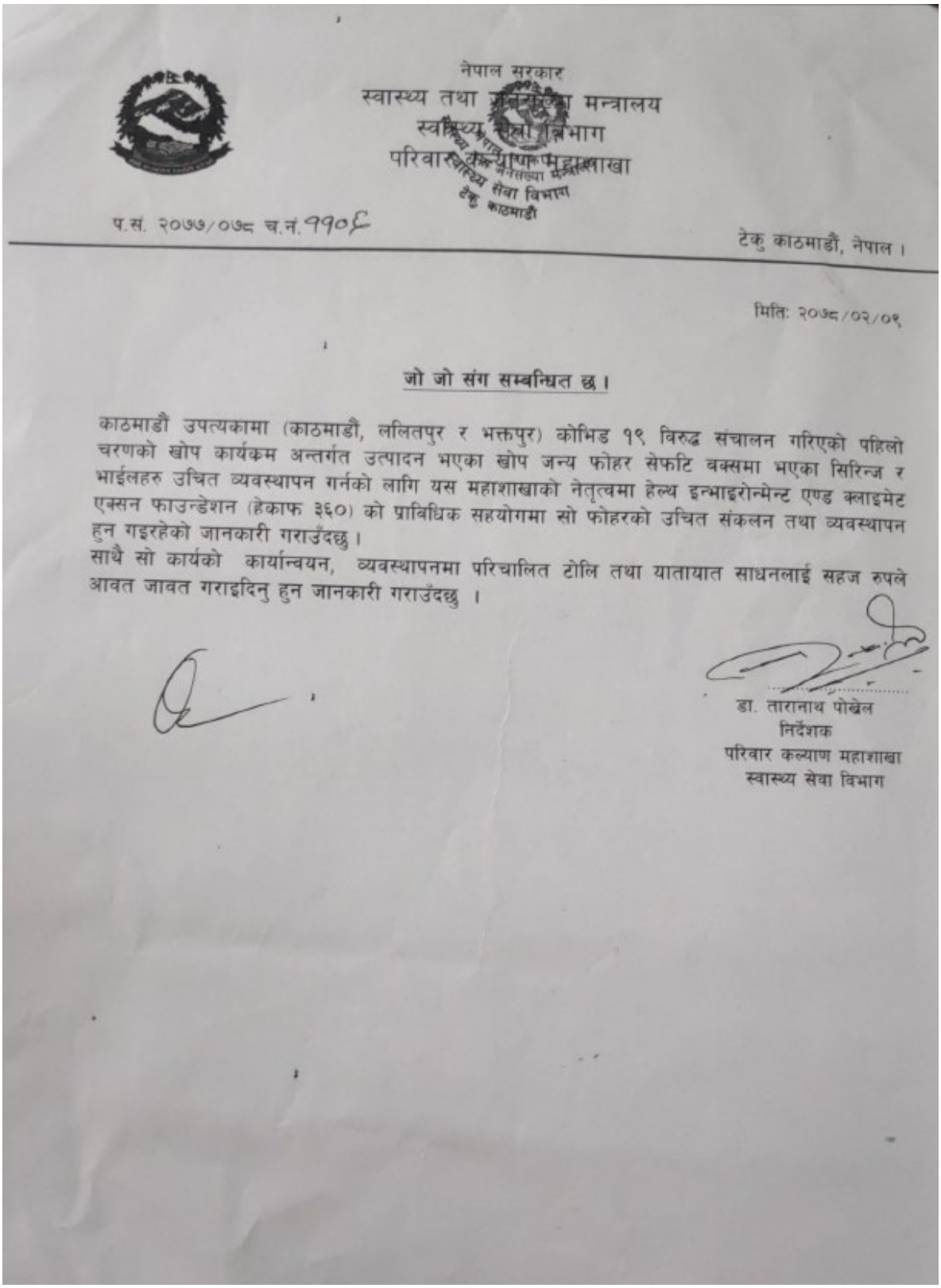
- segregation of infectious and non-infectious waste
- needle cutters for syringes

● The following measures should be taken to ensure long term maintenance of the waste management system in the vaccination sites

- Capacitating staff on managing health care waste
- Immediate replacement of dysfunctional equipment Regular feedback, appreciation on system implementation

● If onsite waste treatment is not possible, waste should be moved to facilities with full functioning waste management centers ideally which can disinfect and dispose

7. Annex I: Coordination Letter Vaccine Waste Collection



नेपाल सरकार
स्वास्थ्य तथा [illegible] मन्त्रालय
स्वास्थ्य सेवा विभाग
परिवार कल्याण महाशाखा

प.सं. २०७७/०७८ च.नं. ११०६

टेकु काठमाडौं, नेपाल ।

मितिः २०७८/०२/०९

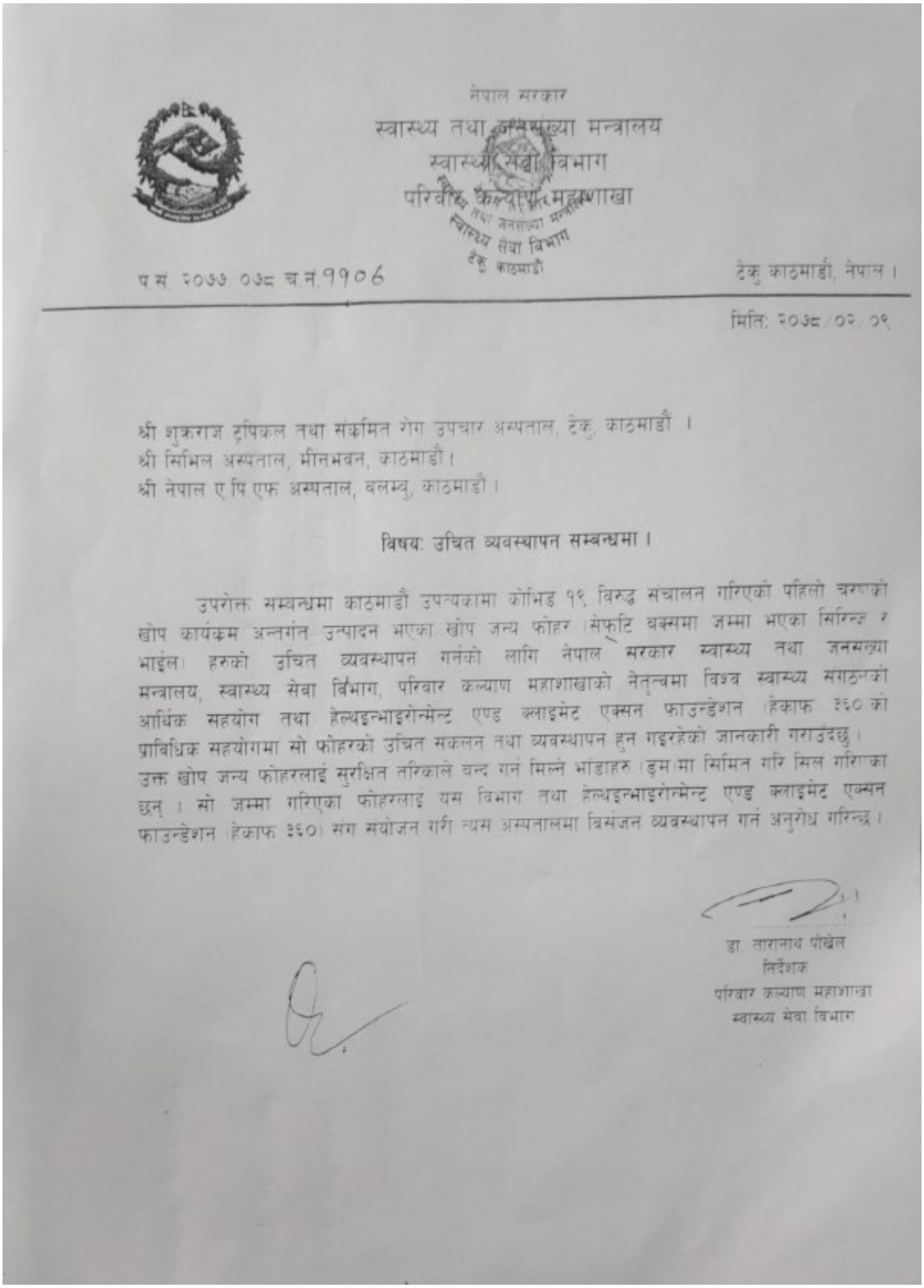
जो जो संग सम्बन्धित छ ।

काठमाडौं उपत्यकामा (काठमाडौं, ललितपुर र भक्तपुर) कोभिड १९ विरुद्ध संचालन गरिएको पहिलो चरणको खोप कार्यक्रम अन्तर्गत उत्पादन भएका खोप जन्य फोहर सेफटि बक्समा भएका सिरिन्ज र भाईलहरु उचित व्यवस्थापन गर्नको लागि यस महाशाखाको नेतृत्वमा हेल्थ इन्भाइरोन्मेन्ट एण्ड क्लाइमेट एक्सन फाउन्डेशन (हेकाफ ३६०) को प्राविधिक सहयोगमा सो फोहरको उचित संकलन तथा व्यवस्थापन हुन गइरहेको जानकारी गराउँदछु ।

साथै सो कार्यको कार्यान्वयन, व्यवस्थापनमा परिचालित टोलि तथा यातायात साधनलाई सहज रुपले आवत जावत गराइदिनु हुन जानकारी गराउँदछु ।

डा. तारानाथ पोखेल
निर्देशक
परिवार कल्याण महाशाखा
स्वास्थ्य सेवा विभाग

Annex II: Coordination Letter Vaccine waste Disinfection and Disposal



नेपाल सरकार
स्वास्थ्य तथा जनसंख्या मन्त्रालय
स्वास्थ्य सेवा विभाग
परिवार कल्याण महाशाखा

च.नं. २०७७ ०७८ च.नं.१९०६ टेकु काठमाडौं, नेपाल ।

मिति: २०७८/०२/०९

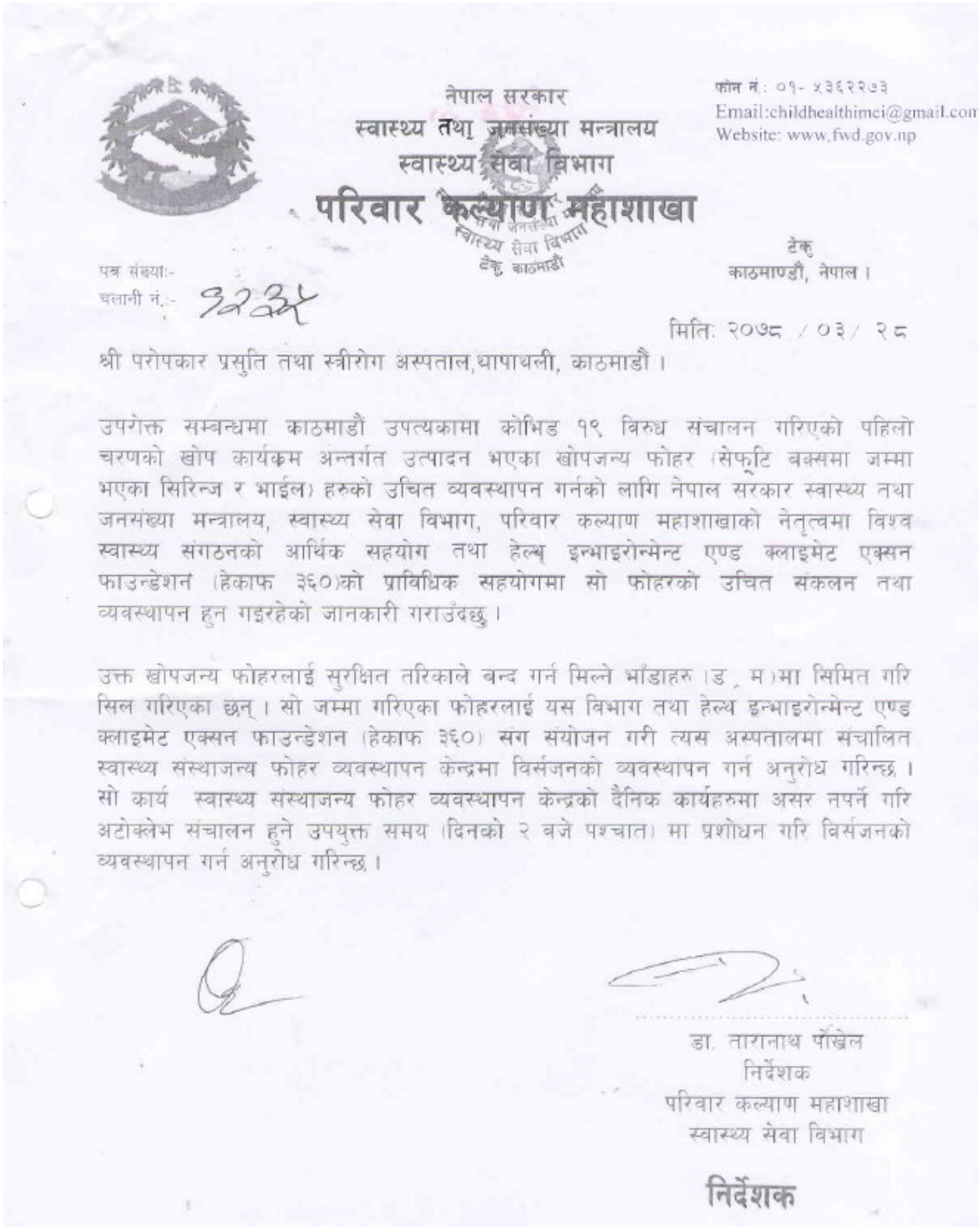
श्री शुकराज ट्रपिकल तथा संक्रमित रोग उपचार अस्पताल, टेकु, काठमाडौं ।
श्री सिभिल अस्पताल, मीनभवन, काठमाडौं ।
श्री नेपाल ए.पि.एफ अस्पताल, बलम्बु, काठमाडौं ।

विषय: उचित व्यवस्थापन सम्बन्धमा ।

उपरोक्त सम्बन्धमा काठमाडौं उपत्यकामा कोभिड १९ विरुद्ध संचालन गरिएको पहिलो चरणको खोप कार्यक्रम अन्तर्गत उत्पादन भएका खोप जन्य फोहर (सेफ्टि बक्समा जम्मा भएका सिरिन्ज र भाईल) हरुको उचित व्यवस्थापन गर्नको लागि नेपाल सरकार स्वास्थ्य तथा जनसंख्या मन्त्रालय, स्वास्थ्य सेवा विभाग, परिवार कल्याण महाशाखाको नेतृत्वमा विश्व स्वास्थ्य संगठनको आर्थिक सहयोग तथा हेल्थइन्भाइरोन्मेन्ट एण्ड क्लाइमेट एक्सन फाउन्डेशन (हेकाफ ३६० को प्राविधिक सहयोगमा सो फोहरको उचित संकलन तथा व्यवस्थापन हुन गइरहेको जानकारी गराउँदछु ।
उक्त खोप जन्य फोहरलाई सुरक्षित तरिकाले वन्द गर्न मिल्ने भाडाहरु (ड्रम) मा सिमित गरि सिल गरिएका छन् । सो जम्मा गरिएका फोहरलाई यस विभाग तथा हेल्थइन्भाइरोन्मेन्ट एण्ड क्लाइमेट एक्सन फाउन्डेशन (हेकाफ ३६०) संग संयोजन गरी न्यस अस्पतालमा विसंजन व्यवस्थापन गर्न अनुरोध गरिन्छ ।

डा. तारानाथ पोखेल
निर्देशक
परिवार कल्याण महाशाखा
स्वास्थ्य सेवा विभाग

Annex III: Coordination Letter Vaccine waste Disinfection and Disposal



नेपाल सरकार
स्वास्थ्य तथा जनसंख्या मन्त्रालय
स्वास्थ्य सेवा विभाग
परिवार कल्याण महाशाखा

फोन नं.: ०१- ४३६२२७३
Email:childhealthimci@gmail.com
Website: www.fwd.gov.np

टेकु
काठमाण्डौं, नेपाल ।

पत्र संख्या:-
चलानी नं.:- ३२३४

मिति: २०७८ / ०३ / २८

श्री परोपकार प्रसुति तथा स्त्रीरोग अस्पताल,थापाथली, काठमाडौं ।

उपरोक्त सम्बन्धमा काठमाडौं उपत्यकामा कोभिड १९ विरुध संचालन गरिएको पहिलो चरणको खोप कार्यक्रम अन्तर्गत उत्पादन भएका खोपजन्य फोहर (सेफ्टि बक्समा जम्मा भएका सिरिन्ज र भाईल) हरुको उचित व्यवस्थापन गर्नको लागि नेपाल सरकार स्वास्थ्य तथा जनसंख्या मन्त्रालय, स्वास्थ्य सेवा विभाग, परिवार कल्याण महाशाखाको नेतृत्वमा विश्व स्वास्थ्य संगठनको आर्थिक सहयोग तथा हेल्थ इन्भाइरोन्मेन्ट एण्ड क्लाइमेट एक्सन फाउन्डेशन (हेकाफ ३६०)को प्राविधिक सहयोगमा सो फोहरको उचित संकलन तथा व्यवस्थापन हुन गइरहेको जानकारी गराउँदछु ।

उक्त खोपजन्य फोहरलाई सुरक्षित तरिकाले बन्द गर्न मिल्ने भाँडाहरु (ड्र म)मा सिमित गरि सिल गरिएका छन् । सो जम्मा गरिएका फोहरलाई यस विभाग तथा हेल्थ इन्भाइरोन्मेन्ट एण्ड क्लाइमेट एक्सन फाउन्डेशन (हेकाफ ३६०) सग संयोजन गरी त्यस अस्पतालमा संचालित स्वास्थ्य संस्थाजन्य फोहर व्यवस्थापन केन्द्रमा विर्सजनको व्यवस्थापन गर्न अनुरोध गरिन्छ । सो कार्य स्वास्थ्य संस्थाजन्य फोहर व्यवस्थापन केन्द्रको दैनिक कार्यहरुमा असर नपर्ने गरि अटोक्लेभ संचालन हुने उपयुक्त समय (दिनको २ बजे पश्चात) मा प्रशोधन गरि विर्सजनको व्यवस्थापन गर्न अनुरोध गरिन्छ ।

डा. तारानाथ पोखेल
निर्देशक
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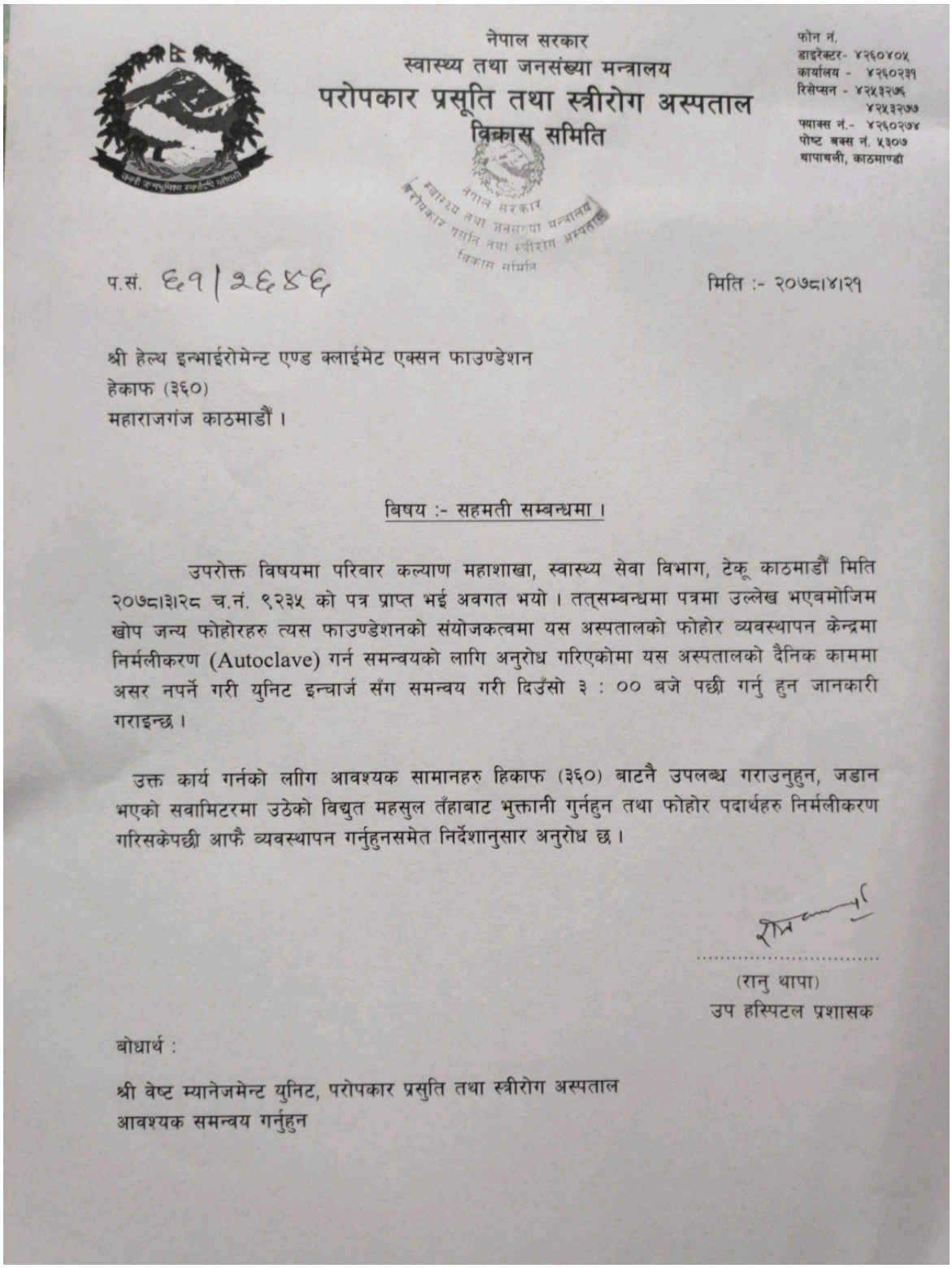
स्वास्थ्य सेवा विभाग

निर्देशक

Annex IV: Letter received from Paropakar Maternity and Women's Hospital



नेपाल सरकार
स्वास्थ्य तथा जनसंख्या मन्त्रालय
परोपकार प्रसूति तथा स्त्रीरोग अस्पताल
विकास समिति

फोन नं.
डाइरेक्टर- ४२६०४०५
कार्यालय - ४२६०२३१
रिसेप्सन - ४२५३२७६
४२५३२७७
फ्याक्स नं.- ४२६०२७४
पोष्ट बक्स नं. ५३०७
थापाथली, काठमाण्डौ

नेपाल सरकार
स्वास्थ्य तथा जनसंख्या मन्त्रालय
परोपकार प्रसूति तथा स्त्रीरोग अस्पताल
विकास समिति

प.सं. ६१/२६४६ मिति :- २०७८।४।२१

श्री हेल्थ इन्भाईरोमेन्ट एण्ड क्लाईमेट एक्सन फाउण्डेशन
हेकाफ (३६०)
महाराजगंज काठमाडौं ।

बिषय :- सहमती सम्बन्धमा ।

उपरोक्त विषयमा परिवार कल्याण महाशाखा, स्वास्थ्य सेवा विभाग, टेकू काठमाडौं मिति २०७८।३।२८ च.नं. ९२३५ को पत्र प्राप्त भई अवगत भयो । तत्सम्बन्धमा पत्रमा उल्लेख भएबमोजिम खोप जन्य फोहोरहरु त्यस फाउण्डेशनको संयोजकत्वमा यस अस्पतालको फोहोर व्यवस्थापन केन्द्रमा निर्मलीकरण (Autoclave) गर्न समन्वयको लागि अनुरोध गरिएकोमा यस अस्पतालको दैनिक काममा असर नपर्ने गरी युनिट इन्चार्ज सँग समन्वय गरी दिउँसो ३ : ०० बजे पछी गर्नु हुन जानकारी गराइन्छ ।

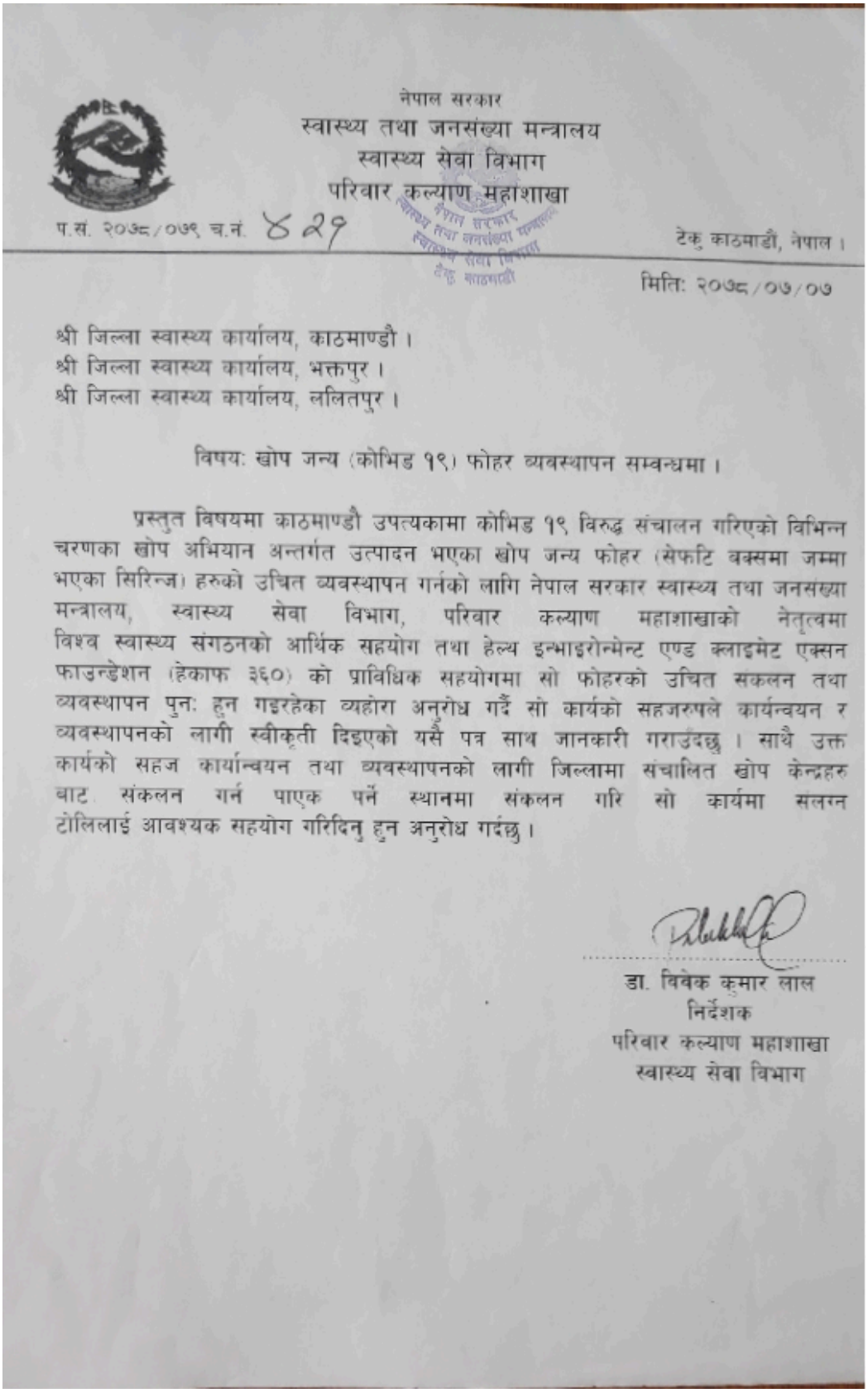
उक्त कार्य गर्नको लागि आवश्यक सामानहरु हिकाफ (३६०) बाटनै उपलब्ध गराउनुहुन, जडान भएको सवामिटरमा उठेको विद्युत महसुल तँहाबाट भुक्तानी गुर्नहुन तथा फोहोर पदार्थहरु निर्मलीकरण गरिसकेपछी आफै व्यवस्थापन गर्नुहुनसमेत निर्देशानुसार अनुरोध छ ।

(रानु थापा)
उप हस्पिटल प्रशासक

बोधार्थ :

श्री वेष्ट म्यानेजमेन्ट युनिट, परोपकार प्रसुति तथा स्त्रीरोग अस्पताल
आवश्यक समन्वय गर्नुहुन

Annex V: Letter received from Family Welfare Division Department of Health Services



नेपाल सरकार
स्वास्थ्य तथा जनसंख्या मन्त्रालय
स्वास्थ्य सेवा विभाग
परिवार कल्याण महाशाखा

प.सं. २०७८/०७९ च.नं. ४२९

टेकु काठमाडौं, नेपाल ।

मिति: २०७८/०७/०७

श्री जिल्ला स्वास्थ्य कार्यालय, काठमाण्डौ ।
श्री जिल्ला स्वास्थ्य कार्यालय, भक्तपुर ।
श्री जिल्ला स्वास्थ्य कार्यालय, ललितपुर ।

विषय: खोप जन्य (कोभिड १९) फोहर व्यवस्थापन सम्बन्धमा ।

प्रस्तुत विषयमा काठमाण्डौ उपत्यकामा कोभिड १९ विरुद्ध संचालन गरिएको विभिन्न चरणका खोप अभियान अन्तर्गत उत्पादन भएका खोप जन्य फोहर (सेफटि बक्समा जम्मा भएका सिरिन्ज) हरुको उचित व्यवस्थापन गर्नको लागि नेपाल सरकार स्वास्थ्य तथा जनसंख्या मन्त्रालय, स्वास्थ्य सेवा विभाग, परिवार कल्याण महाशाखाको नेतृत्वमा विश्व स्वास्थ्य संगठनको आर्थिक सहयोग तथा हेल्थ इन्भाइरोन्मेन्ट एण्ड क्लाइमेट एक्सन फाउन्डेशन (हेकाफ ३६०) को प्राविधिक सहयोगमा सो फोहरको उचित संकलन तथा व्यवस्थापन पुनः हुन गइरहेका व्यहोरा अनुरोध गर्दै सो कार्यको सहजरुपले कार्यन्वयन र व्यवस्थापनको लागी स्वीकृती दिइएको यसै पत्र साथ जानकारी गराउँदछु । साथै उक्त कार्यको सहज कार्यान्वयन तथा व्यवस्थापनको लागी जिल्लामा संचालित खोप केन्द्रहरु बाट संकलन गर्न पाएक पर्ने स्थानमा संकलन गरि सो कार्यमा संलग्न टोलिलाई आवश्यक सहयोग गरिदिनु हुन अनुरोध गर्दछु ।

डा. विवेक कुमार लाल
निर्देशक
परिवार कल्याण महाशाखा
स्वास्थ्य सेवा विभाग

Annex V: Schedule for Collecting Vaccine Waste

Date	Name of Municipality	Vaccination Site
24-May-21	Kathmandu Metropolitan City	DPHO, Teku
26-May-21	Nagarjun Municipality	Ramkot PHC
		Sitapaila HP
30-May-21	Dakshinkali Municipality	Seshnarayan HP
		Chalnakhel Hospital
	Kirtipur Municipality	Panga Balkumari HP
		Bishnudevi Hospital
		National Ayurved Research Center
	Chandragiri Municipality	Thankot Hospital
		Satungal HP
		Nepal APF Hospital
2-Jun-21	Kathmandu Metropolitian City	DPHO, Teku
3-Jun-21	Budhanilakantha Municipality	Budhanilakantha Municipality Office
		Bal Uddhar School
		Karuna Hospital
		Chunikhel PHC
		Ganesh School
7-Jun-21	Suryabinayak Municipality	Suryabinayak Nagar Hospital
		Other Vaccination Sites (Suryabinayak Municipality)
		Balkot Ward No #3
		Sirutar
		Balkot Ward No #2
	Bhaktapur Municipality	Public Health Office, Chyamasingh
	Changunarayan Municipality	Jhaukhel HP
		Jhaukhel UHC
9-Jun-21	Lalitpur Municipality	Public Health Office, Pulchowk
13-Jun-21	Nagarjun Municipality	Ramkot PHC
		Elight School
		Ichhangu HP
	Kirtipur Municipality	National Ayurved Research Center
16-Jun-21	Tarakeshwor Municipality	Dharmasthali HP
		Manamaiju HP
20-Jun-21	Tokha Municipality	Chandeshwori PHC
		All Nepal Hospital
	Shankarapur Municipality	Lapsiphedi HP
		Sakhu HP
		Shankharapur Nagar Hospital
24-Jun-21	Mahalaxmi Municipality	Tikathali HP
		Lamatar HP

		Lubhu PHC
		Siddhipur HP
		Imadol HP
25-Jun-21	Suryabinayak Municipality	Suryabinayak Nagar Hospital
	Madhyapur Thimi Municipality	Lokanthali HP
	Kageshwori Manahara Municipality	Gothatar HP
		Mulpani Nagar Hospital
	Godawari Municipality	Bajrabarahi Hospital
		Badegon HP
	Suryabinayak Municipality	Balkot HP
		Sirutar HP
		Dadhikot
	Bhaktapur Municipality	Public Health Office, Chyamasingh
28-Jul-21	Budhanilakantha Municipality	Bal Uddhar School
		Ganesh School
		Karuna Hospital
		Ghumti HP
31-Oct-21	Kathmandu Municipality	DPHO, Teku
9-Nov-21	Lalitpur Municipality	Public Health Office, Pulchowk
10-Nov-21	Lalitpur Municipality	Public Health Office, Pulchowk
28-Nov-21	Bhaktapur Municipality	Public Health Office, Chyamasingh
28-Nov-21	Suryabinayak Municipality	Dadhikot, Gamcha
28-Nov-21	Changunarayan Municipality	Jhaukhel UHC
		Chaling HP
		Duwakot Ward No #1
		Duwakot Ward No #2
5-Dec-21	Bhaktapur Municipality	DHO, Katunje

Annex VI: Data of Disposal via Microwave

Months	Date	Number of Safety Boxes Disposed	Months	Date	Number of Safety Boxes Disposed
Jun	14-Jun	23	Jul	1-Jul	27
	15-Jun	55		2-Jul	63
	17-Jun	66		5-Jul	18
	18-Jun	31		6-Jul	45
	21-Jun	30		8-Jul	27
	22-Jun	80		12-Jul	30
	25-Jun	21		14-Jul	10
	28-Jun	45		20-Jul	18
	30-Jun	6		21-Jul	18
Sep	1-Sep	35	Oct	10-Oct	33
	2-Sep	13		11-Oct	64
	3-Sep	46	Nov	10-Nov	5
	6-Sep	51		11-Nov	20
	8-Sep	20		12-Nov	107
	9-Sep	22		13-Nov	14
	10-Sep	31		15-Nov	128
	11-Sep	64		16-Nov	66
	12-Sep	131		17-Nov	89
	13-Sep	14		18-Nov	142
	15-Sep	126		19-Nov	102
	16-Sep	66		22-Nov	31
	17-Sep	91		23-Nov	50
	18-Sep	35		24-Nov	27
	19-Sep	14			
	20-Sep	23			
	21-Sep	30			
	22-Sep	50			
	23-Sep	20			
	24-Sep	22		25-Nov	10
	Total	**1261**		**Total**	**1144**
			Grand Total		**2405**

Annex VII: Data Record of Autoclave Log

Date	Drum Number	Weight of Drum (kg)	Autoclave Tape	Chemical Indicator	SCBI Test	SCBI Control	Remarks
21-Aug-21	CVW-01	13.32	Pass	Pass	No Growth	Growth	
22-Aug-21	CVW-02	15.70	Pass	Pass	No Growth	Growth	
21-Aug-21	CVW-03	13.67	Pass	Pass	No Growth	Growth	
21-Aug-21	CVW-04	14.54	Pass	Pass	No Growth	Growth	
17-Aug-21	CVW-05	14.76	Pass	Pass	Growth	Growth	Repeated on 19 Aug 2021
19-Aug-21	CVW-05	14.76	Pass	Pass	Growth	Growth	Repeated on 25 Aug 2021
25-Aug-21	CVW-05	14.76	Pass	Pass	No Growth	Growth	
14-Aug-21	CVW-06	14.29	Pass	Pass	No Growth	Growth	
21-Aug-21	CVW-07	13.93	Pass	Pass	No Growth	Growth	
21-Aug-21	CVW-08	0.55	Pass	Pass	No Growth	Growth	
17-Aug-21	CVW-09	14.73	Pass	Fail	Growth	Growth	Repeated on 17 Aug 2021
17-Aug-21	CVW-09	14.73	Pass	Pass	No Growth	Growth	
14-Aug-21	CVW-10	14.57	Pass	Pass	No Growth	Growth	
15-Aug-21	CVW-11	13.40	Pass	Pass	No Growth	Growth	
17-Aug-21	CVW-12	14.84	Pass	Pass	Growth	Growth	Repeated on 18 Aug 2021
18-Aug-21	CVW-12	14.84	Pass	Pass	No Growth	Growth	
21-Aug-21	CVW-13	14.87	Pass	Pass	No Growth	Growth	
21-Aug-21	CVW-14	13.35	Pass	Pass	No Growth	Growth	
17-Aug-21	CVW-15	12.48	Pass	Pass	No Growth	Growth	
19-Aug-21	CVW-15	12.48	Pass	Pass	No Growth	Growth	
22-Aug-21	CVW-16	14.00	Pass	Pass	No Growth	Growth	
22-Aug-21	CVW-17	14.75	Pass	Pass	No Growth	Growth	
21-Aug-21	CVW-18	15.38	Pass	Pass	No Growth	Growth	
22-Aug-21	CVW-19	15.61	Pass	Pass	No Growth	Growth	
16-Aug-21	CVW-20	14.94	Pass	Fail	Growth	Growth	Repeated on 18 Aug 2021
18-Aug-21	CVW-20	14.94	Pass	Pass	No Growth	Growth	
Date	**Drum Number**	**Weight of Drum (kg)**	**Autoclave Tape**	**Chemical Indicator**	**SCBI Test**	**SCBI Control**	**Remarks**
17-Aug-21	CVW-21	13.97	Pass	Pass	Growth	Growth	Repeated on 18 Aug 2021

18-Aug-21	CVW-21	13.97	Pass	Pass	Growth	Growth	Repeated on 19 Aug 2021
19-Aug-21	CVW-21	13.97	Pass	Pass	No Growth	Growth	
14-Aug-21	CVW-22	16.97	Pass	Pass	No Growth	Growth	
14-Aug-21	CVW-23	13.82	Pass	Pass	No Growth	Growth	
16-Aug-21	CVW-24	13.82	Pass	Fail	Growth	Growth	Repeated on 18 Aug 2021
18-Aug-21	CVW-24	13.82	Pass	Pass	No Growth	Growth	
15-Aug-21	CVW-25	14.05	Pass	Pass	No Growth	Growth	
16-Aug-21	CVW-26	14.95	Pass	Fail	Growth	Growth	Repeated on 18 Aug 2021
18-Aug-21	CVW-26	14.95	Pass	Pass	Growth	Growth	Repeated on 19 Aug 2021
19-Aug-21	CVW-26	14.95	Pass	Pass	Growth	Growth	Repeated on 25 Aug 2021
25-Aug-21	CVW-26	14.95	Pass	Pass	No Growth	Growth	
14-Aug-21	CVW-27	13.24	Pass	Pass	No Growth	Growth	
14-Aug-21	CVW-28	13.26	Pass	Pass	No Growth	Growth	
16-Aug-21	CVW-29	15.02	Pass	fail	Growth	Growth	Repeated on 18 Aug 2021
18-Aug-21	CVW-29	15.02	Pass	Pass	Growth	Growth	Repeated on 19 Aug 2021
19-Aug-21	CVW-29	15.02	Pass	Pass	No Growth	Growth	
22-Aug-21	CVW-30	13.91	Pass	Pass	No Growth	Growth	
15-Aug-21	CVW-31	17.25	Pass	Pass	No Growth	Growth	
14-Aug-21	CVW-32	15.57	Pass	Pass	No Growth	Growth	
17-Aug-21	CVW-33	11.29	Pass	Pass	Growth	Growth	Repeated on 18 Aug 2021
Date	**Drum Number**	**Weight of Drum (kg)**	**Autoclave Tape**	**Chemical Indicator**	**SCBI Test**	**SCBI Control**	**Remarks**
18-Aug-21	CVW-33	11.29	Pass	Pass	Growth	Growth	Repeated on 19 Aug 2021
19-Aug-21	CVW-33	11.29	Pass	Pass	No Growth	Growth	
10-Aug-21	CVW-34	14.54	Pass	Fail	Growth	Growth	Repeated on 12 Aug 2021

12-Aug-21	CVW-34	14.54	Pass	Fail	Growth	Growth	Repeated on 13 Aug 2021
13-Aug-21	CVW-34	14.54	Pass	Pass	No Growth	Growth	
13-Aug-21	CVW-35	20.00	Pass	Pass	No Growth	Growth	
10-Aug-21	CVW-36	17.72	Pass	Pass	No Growth	Growth	
10-Aug-21	CVW-37	15.57	Pass	Pass	No Growth	Growth	
11-Aug-21	CVW-38	16.51	Pass	Pass	No Growth	Growth	
11-Aug-21	CVW-39	30.05	Pass	Pass	No Growth	Growth	
11-Aug-21	CVW-40	16.57	Pass	Fail	Growth	Growth	Repeated on 12 Aug 2021
12-Aug-21	CVW-40	16.57	Pass	Fail	Growth	Growth	Repeated on 12 Aug 2021
12-Aug-21	CVW-40	16.57	Pass	Fail	Growth	Growth	Repeated on 13 Aug 2021
13-Aug-21	CVW-40	16.57	Pass	Pass	No Growth	Growth	
11-Aug-21	CVW-41	15.43	Pass	Fail	Growth	Growth	Repeated on 12 Aug 2021
12-Aug-21	CVW-41	15.43	Pass	Pass	Growth	Growth	Repeated on 13 Aug 2021
13-Aug-21	CVW-41	15.43	Pass	Pass	No Growth	Growth	
12-Aug-21	CVW-42	15.84	Pass	Pass	Growth	Growth	Repeated on 13 Aug 2021
13-Aug-21	CVW-42	15.84	Pass	Pass	No Growth	Growth	
12-Aug-21	CVW-43	16.52	Pass	Pass	No Growth	Growth	
9-Aug-21	CVW-44	17.39	Pass	Pass	No Growth	Growth	
13-Aug-21	CVW-45	27.78	Pass	Pass	No Growth	Growth	

Annex VIII: Draft Poster Design