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REGIONAL ACTION PLAN AND TIMETABLE FOR SAFE HANDLING AND MAXIMUM LABORATORY CONTAINMENT OF WILD POLIOVIRUSES AND POTENTIALLY INFECTIOUS MATERIALS

Once poliomyelitis is eradicated, the laboratories of the world will be the only remaining source of wild poliovirus.

The Global Commission for the Certification of Eradication of Poliomyelitis, at its second meeting (Geneva, 1 May 1997), recommended that, prior to Global Certification, Regional Commissions should demonstrate to the Global Commission that regional laboratory stocks of wild poliovirus have been properly contained.

WHO has therefore developed a Regional Action Plan and Timetable for Safe Handling and Maximum Laboratory Containment of Wild Polioviruses and Potentially Infectious Materials.

Once poliomyelitis is eradicated, the laboratories of the world will be the only remaining source of wild poliovirus. Safe handling and, ultimately, safe storage under maximum security conditions of poliovirus isolates and potentially infectious materials in the laboratory is crucial.

Until now, poliovirus biosafety concerns have been minimal. Universal immunization against poliomyelitis has reduced the risk of disease for laboratory workers and the general public. General laboratory biosafety practices have further reduced the risks of poliovirus contamination of the environment. The probability of a laboratory-associated poliovirus infection is small, but the consequences of an infection grow greater with time. A chance reintroduction of wild polioviruses from the laboratory into the community presents a major threat to the maintenance of poliomyelitis eradication.

The Region now faces the challenge of locating the many laboratories that have wild poliovirus infectious materials and ensuring that they are safely stored in the laboratory, rendered non-infectious, or destroyed. A Regional Action Plan and Timetable for Safe Handling and Maximum Laboratory Containment of Wild Polioviruses and Potentially Infectious Materials has been developed to address this challenge (copies are available for Members on request). This document provides a plan of action to prevent transmission of wild poliovirus from the laboratory into the community. The first step in this process is to identify and list all laboratories in the Region that have wild poliovirus infectious materials. In addition, all laboratories working with these materials must apply biosafety level-2 (BSL-2/polio) procedures to ensure their safe handling and storage (see Boxes 1 and 2).

Box 1. Major BSL requirements

	BSL-2	BSL-2/polio	BSL-4
Good microbiological techniques	Yes	Yes	Yes
Personnel			
• Immunized		Yes	Yes
Facility			
• Autoclave on site	Yes	Yes	Yes
• BSC*-I or II	Yes	Yes	Desirable
• Limited access		Yes	Yes
• Isolation of laboratory			Yes
• Sealable for decontamination			Yes
• Special ventilation system			Yes
• Effluent treatment			Yes
• BSC*-III or positive pressure suits			Yes
Wild polioviruses			
• Used only when essential		Yes	
• Controlled, with limited access		Yes	Yes
• Stored securely		Yes	Yes

*Biological safety cabinets

Box 2. Biosafety Level (BSL)-2/polio

- Good microbiological techniques are practised.
- Facility meets standards for basic BSL-2 laboratory.
- Access to laboratory is restricted.
- Persons entering the laboratory are immunized against polio in accordance with WHO recommendations.
- Use of wild polioviruses is discontinued where attenuated vaccine polioviruses, inactivated antigens, or non-polio enteroviruses may serve the same purposes, for example, as challenge viruses in neutralizing antibody tests.
- All poliovirus stocks and potentially infectious materials are disposed of when there are no programmatic or research needs for retention.
- An internal control system is implemented for all wild polioviruses retained in the laboratory (current inventory, good record keeping).
- Wild polioviruses are stored in separate, secure areas with limited access.
- Only viruses that are readily identifiable by molecular methods are used if wild virus reference strains or working stocks are required.
- Appropriate sterilization and/or incineration is used for disposing of wild polioviruses, infectious materials and potentially infectious materials.

The Global Commission for the Certification of Eradication of Poliomyelitis, at its second meeting (Geneva, 1 May 1997), recommended that, prior to Global Certification, Regional Commissions should demonstrate to the Global Commission that regional laboratory stocks of wild poliovirus have been properly contained. To do this, laboratories still possessing wild poliovirus infectious materials must either (1) work under maximum laboratory containment (biosafety level 4, BSL-4) conditions (see Box 1); or, (2) transfer wild poliovirus infectious and potentially infectious materials to WHO designated repositories; or (3) render such materials non-infectious, or destroy them, under appropriate conditions. Because BSL-4 containment facilities are expensive to build and operate, it is expected that most nations and most laboratories will elect one of the latter two options.

In order to demonstrate to the Global Commission that laboratory stocks of wild poliovirus in the Region have been properly contained, it will be necessary for Member States in the next 12 months, in collaboration with WHO, to:

- establish an inventory of laboratories holding wild poliovirus infectious or potentially infectious materials;
- ensure that all laboratories handling and storing these materials are doing so at BSL-2/polio level or above; and
- make preparations for implementation of maximum containment (BSL-4) for all wild poliovirus infectious materials remaining in their countries.