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COST ESTIMATE OF EQUIPMENT FOR MODEST QUALITY CONTROL LABORATORIES

A list of equipment for first-stage and medium-size national quality control laboratories for drug surveillance was incorporated in Annex 1 of the twenty-ninth report of the WHO Expert Committee on Specifications for Pharmaceutical Preparations (TRS 704).

A list of the costing of these equipments was subsequently established and updated, based on data available to the Secretariat. We believe this information may be helpful for drug regulatory authorities establishing or upgrading their testing facilities.

TABLE 1
FIRST-STAGE LABORATORY FOR DRUG SURVEILLANCE

	No.	US\$	Total
1. Equipment and major instruments			
Analytical balance (four-plate, mechanical)	1	1000.-	
Spectrophotometer (UV/visible, single-beam, manual)	1	5000.-	
pH-meter (with electrodes)	1	400.-	
Karl Fischer titrator	1	2000.-	
Melting-point apparatus	1	400.-	
Polarimeter (manual)	1	2000.-	
Drying oven	1	1500.-	
Vacuum oven	1	2000.-	
Vacuum pump	1	200.-	
Centrifuge (table top)	1	700.-	
Hot plate with stirrer	1	900.-	
Equipment for thin-layer chromatography including - spreader - spotting equipment - developing chambers - spraying bottles - UV viewing lamp	3 @ 300.- each	1500.-	
Disintegration test equipment (6 baskets)	1	3500.-	
Microscope	1	600.-	
Refrigerator (with freezer compartment)	1	300.-	
Micrometer calipers	1	20.-	
		<u>22020.-</u>	22020.-



2. Optional items

Flame photometer	1	4000.-
Osmometer	1	4000.-
Vortex mixer	1	200.-
Constant temperature water-bath	1	1000.-
Ultrasonic cleaner	1	400.-
Refractometer	1	3500.-
Shaker (wrist-action)	1	700.-
Oxygen flask combustion apparatus	1	<u>1700.-</u>
		<u>15500.-</u>
		<u>37520.-</u>

TABLE 2
MEDIUM-SIZE CONTROL LABORATORY

1. General Laboratory Equipment

Microbalance (five-plate)	1	2500.-
Analytical balance (four-plate)	2	6300.-
Laboratory balance (top-loading)	1-2 @ 3150.- each	3000.-
Refrigerator (with freezer compartment)	2-3 @ 300.- each	900.-
Water distillation still (10 litres/hour)	1	1700.-
Water deionizing equipment (10 litres/hour)	1	500.-
Drying oven	2-3 @ 1300.- each	3900.-
Muffle furnace	1	2000.-
Vacuum oven	1	1800.-
Heating plates with magnetic stirrers	3-4 @ 300.- each	1200.-
Vacuum rotary evaporator	1-2 @ 1250.- each	2500.-
Water-bath (electrical)	2-3 @ 900.- each	2700.-
Automatic titrimeter	1	4500.-
Shaker (wrist-action)	1	700.-
Micro-Kjeldahl equipment	1	1700.-
Equipment for thin layer chromatography including		
- spreader	1)	
- spotting equipment	1)	
- developing chambers	10)	1500.-
- spraying bottles	6)	
- UV viewing lamps	3)	
Laboratory centrifuge (floor model)	1	3200.-

Ultrasonic cleaner	2	@	400.- each	800.-
Vortex mixers	2	@	200.- each	400.-
Heating mantles for flasks (assorted sizes)	6	@	100.- each	600.-
Variable transformers	5	@	400.- each	2000.-
Vacuum pump (rotary, oil)	2	@	150.- each	300.-
Micrometer calipers	1			20.-
Glove box	1			1500.-
Sieves (set)	2	@	100.- each	200.-
Microscope	1-2	@	600.- each	1200.-
				<u>47620.-</u>

Major Instruments

IR spectrophotometer (recording, grating)	1			12500.-
UV/visible recording spectrophotometer	1			7500.-
UV/visible spectrophotometer	1			4400.-
Gas chromatograph	1			34000.-
Polarimeter (manual)	1			2000.-
Refractometer	1			500.-
pH-meters (with electrodes)	2	@	350.- each	700.-
Melting point apparatus (electrically heated)	1			500.-
Disintegration test equipment (6 baskets)	1			3200.-
Dissolution test equipment (for 6 tablets/capsules)	1			6700.-
Penetrometer	1			500.-
IR hydraulic pellet press with dies 15 tonf/in ² pressure 23 x10 ⁷ Pa)	1			4000.-
Agate mortar with pestle	1			20.-
Karl Fischer titrator	1			2000.-
Oxygen flask combustion apparatus	1			1700.-
				<u>80220.-</u>

Optional Items

Ice machine	1			1500.-
Solvent recovery apparatus	1			2500.-
Flame photometer or Atomic absorption spectrophotometer	1			4000.-
Osmometer	1			4000.-
Vibrospatula	1			300.-
High-pressure liquid chromatograph	1			32000.-
Densitometer for TLC plates	1			12500.-

Fluorometer (filter)	1	5000.-
Hardness tester	1	500.-
Friability tester	1	5300.-
Viscosimeter	1	3200.-
		<u>70800.-</u>
		198640.-

Equipment for microbiology unit

Autoclaves	2	@ 3750.- each	7500.-
Microscopes (bacteriological)	2	@ 2500.- each	5000.-
Incubators *	2-3	@ 1500.- each	4500.-
Centrifuge with refrigeration	1		12500.-
Membrane filter assembly for sterility tests	1		100.-
Colony counter with magnifier	1		600.-
Laminar flow bench	1		2500.-
Hot-air sterilizer	1		2800.-
Spectrophotometer, visible range (simple model)	1		1300.-
Nephelometer (+ turbidimeter)	1		900.-
Refrigerators	2	@ 300.-each	600.-
Deep freezer	1		6300.-
Large plate microbiological assay equipment, including zone reader and recorder	1 set		600.-
pH-meter	1		400.-
Cleaning machines for glassware, especially one for cleaning pipettes	2	@ 3750.- each	7500.-
Water-bath (thermostatically controlled)	2	@ 900.- each	1800.-
			<u>54900.-</u>
			54900.-
			253540.-

* Cooling incubators in countries with tropical climates