

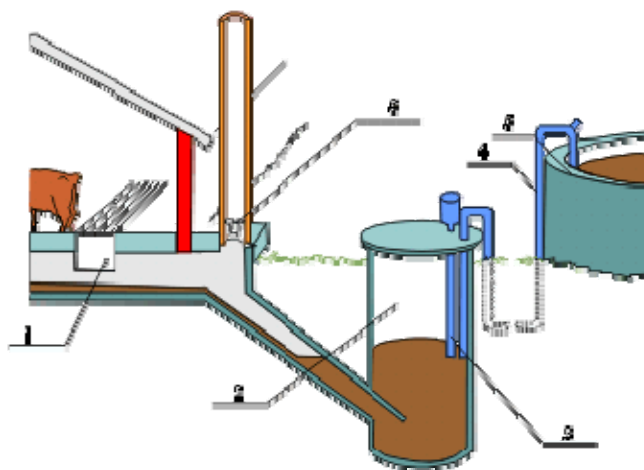
ANNEX No. 26 Storage and handling of Manure

The criteria to be fulfilled for establishment of manure storage facility are as follows:

- 1) Manure storage structures must be designed and managed to contain manure, wastewater, contaminated runoff, and manure mixed with litter or bedding without any discharge to the ground and in waters;
- 2) For storing manure the following types of storage may be proposed by the applicant:
 - a. outdoors concrete pads only for solid manure storage
 - b. deep pits under the building floor housing the animals farther from milking parlour or processing facility, or outside below ground concrete storages or outside above ground tank storages or concrete lagoons, for liquid manure storage
- 3) In case of storing manure in solid state concrete pad with at least three side walls where the manure is stacked must be envisaged, following these recommendations:
 - a. Urine has to be separated from solid manure and directed into a urine depot.
 - b. levelled ground for solid manure heaps should be placed on elevated grounds to prevent flooding from heavy rain
 - c. the ground and walls must be made of waterproof material which prior to stocking must be covered with layer of 70 cm substratum of chopped straw, leaves in order to absorb liquid manure;
 - d. the walls and floor must be build to be penetrable for urine (draining canals) and it flows to the urine depot or tank through the impermeable canals.
 - e. the ground site must be enclosed with 50 cm of ground dam and be fenced with at least 1,5 m high fence and properly marked with warning sign;
 - f. the heaps must be covered with film or with 20-cm thick layer of peat, chopped straw for odour protection as well as roofed for rain and sun protection.
 - g. Manure heaps must be at least 30 m from any well and must not be on a shore or bank of a water body, protected zone of a water intake
 - h. The capacity of the pad should be to store solid manure for at least 12 weeks;
- 4) For storing manure in semi-solid or liquid state above ground tank storages or bellow ground concrete storages or concrete lagoons must be envisaged, following these recommendations:
 - a. In case of metal or concrete above ground tank, the tank must; be covered (floating membrane or air-proof tent or other) and contain provision for aeration to avoid accumulation of lethal gases and pumping;

- b. In case of below ground concrete storages or outdoors concrete lagoons, the floors and walls must be waterproof and any possibility of leakage must be prevented;
 - c. the ground site where the storage is located must be fenced with at least 1,5 m high fence and properly marked with warning sign;
 - d. The liquid manure must not be directed to the main sewage system
 - e. The capacity of the tank or concrete lagoon should be to store liquid manure for at least 16 weeks;
- 5) Manure handling system and equipment for manure handling must complement the investment in manure storage facilities with respect to the relevant manure storage system proposed by the applicant;

Example of manure storage and handling system in case of deep pits under the building floor housing the animals for storage of liquid manure:



Slurry removal system: 1 – slurry channel; 2 - pit for pumping over; 3 - pump; 4 - rising pipe of slurry; 5 - slurry reservoir; 6 – ventilator