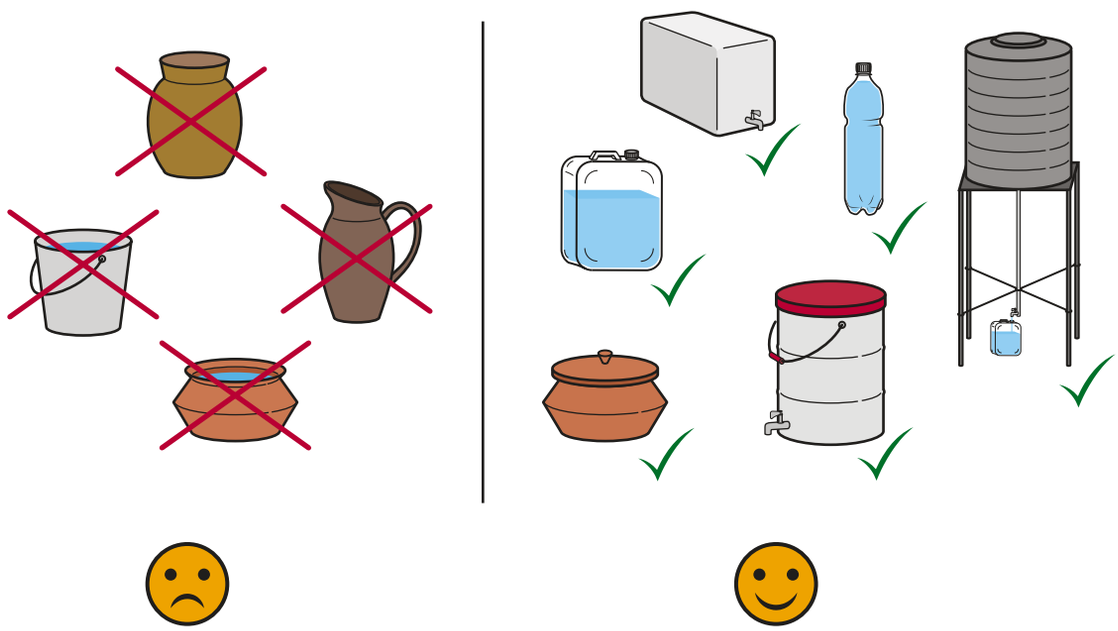
Safe Water Storage

Response Phase	Application Level	Management Level	Objectives / Key Features
** Acute Response ** Stabilisation ** Recovery	** Household * Neighbourhood City	** Household * Shared Public	Protection from water (re-) contamination
Local Availability	**Technical Complexity**	**Maturity Level**	
*** High	* Low	*** High	



Safe Water Storage prevents (re-)contamination during storage in the home, protecting water from contact with hands, cups/dippers, animals, dirt and pathogens. It is important in all phases of an emergency.

A Safe Storage Container has a lid, a tap or narrow outlet to pour water, is opaque or at most translucent and is easy to clean. Containers can be of various sizes, ranging from 10 L vessels, buckets or jerrycans **(D.1)** to 1,000 L storage tanks. Practicing Safe Storage in the household ensures an accessible supply to meet household demand.

Design Considerations: To be considered safe, storage containers must be sealed or covered and preferably have a narrow opening or tap for filling and pouring, preventing hands or contaminated dippers from entering the water. They should be made from materials that are durable, lightweight and non-transparent to avoid algal growth. Good storage containers are easy to lift and carry, are stable with a flat bottom and are easy to clean (e.g. have no small spaces such as hollow handles where dirt and algae can accumulate). Storage containers can be placed inside the house or outside (e.g. underground, on the roof of a house or on a specially designed stand or tower). They can be manually filled with water or connected directly to a distribution network, rainwater harvesting system or other storage tank. If water treatment occurs at home, it is important to have at least two separate storage containers, one for transporting untreated water and one for storing treated water. Safe Storage containers should be protected from animals.

Materials: Storage containers can vary widely in design and materials. Clay, gourds, copper, steel, aluminium and plastic are commonly used. Polyethylene jerrycans, collapsible jerrycans and plastic buckets with taps are also commonly distributed in emergencies. Non-transparent material is preferable to prevent algal growth. Storage devices can be equipped with taps. Low quality taps tend to leak relatively quickly and may need to be replaced more frequently to avoid waste, and the trade-off between the expense of durable imported taps and lower quality local taps should be considered. Drinking water containers should be made from new drinking–water-grade materials such as polypropylene, polyethylene or, if thoroughly cleaned to prevent bacterial growth, containers previously used for food storage (e.g. edible oil). Gas canisters, paint tins, or other vessels that have contained chemicals or substances harmful to humans should not be used.

Applicability: Safe drinking water storage is critical in emergencies where water quality and supply are affected. Sphere suggests ensuring at least 7.5–15 L per person per day for drinking, cooking and personal hygiene in emergency situations, depending on local habits, physiology and climate. Sphere also recommends that each household has at least two clean water collecting containers of 10–20 L. Additional clean water storage containers should be available to ensure there is always water in the house. Adequate Safe Storage requirements may vary based on the reliability of the water supply and the number of people per household. Different user groups (e.g. children, disabled or elderly) may benefit from smaller or specially designed containers **(see X.15)**. Safe Storage containers are often produced locally, making them readily accessible to many communities. In the acute response phase, the containers should be accessed and distributed quickly. In the stabilisation and recovery phases, they can be replaced by more durable options with tap and stand.

Operation and Maintenance: If the source water contains residual chlorine and containers are kept closed, the risk of recontamination is low and only occasional cleaning is needed. If there is no residual chlorine at the source, hygiene conditions are poor or silt accumulates in the container due to poor water quality, the containers must be cleaned regularly. Cleaning should occur weekly or whenever containers appear dirty. Depending on the type of container, cleaning can be done using soap and chlorine and scrubbing with a soft brush or cloth to prevent scratching the surfaces. Safe water handling practices for Water Storage containers include storing treated water off the ground in a shady place in the home and away from small children, animals and insects. Funnels used to fill narrow-mouth containers should be clean to prevent contamination. Users must be educated on the risks of post-treatment or post-delivery contamination via contact with hands, insects, animals, dust and dirty cups or dippers **(see X.16)**.

Health and Safety: Post-treatment contamination has been found in improperly stored water in households. Regardless of the microbiological quality of the water at the time of collection, it is often recontaminated during abstraction, transport and storage. Studies have shown that household water treatment more effectively reduces diarrhoea when combined with Safe Storage practices and corresponding devices. Where water is not treated at the source, it is important to designate separate jerry cans for transport and storage to avoid recontamination after treatment. This should be highlighted through hygiene educational messaging **(see X.16)**.

Costs: Costs for Safe Storage containers vary based on materials, design and location. Safe Storage containers produced locally are usually affordable for households, though where local products are not available, transportation costs can be high. Other costs include disinfection and cleaning products, which are often already available within households. Good quality, durable containers can typically be used for years before replacements are required.

Social and Environmental Considerations: Types of water storage containers vary across communities and cultures, so should be selected based on the preferences and physical abilities of the user, affordability, robustness and ease of transport, use and maintenance. In emergency settings, rapid assessments and consultations with households can guide the selection of appropriate containers. The distribution of Safe Storage devices should be combined with (recurrent) hygiene promotion activities **(see X.16)** to trigger and maintain desired transport and storage practices. It is also recommended to regularly monitor corresponding household practices and the water quality at the point of use.

Strengths and Weaknesses:

⊕ Reduces likelihood of recontamination with correct container design
⊕ Is generally affordable
⊕ Is simple to use and maintain

⊖ Containers with taps are more vulnerable to breaking
⊖ Can be difficult to clean
⊖ Has risk of water (re-)contamination when not cleaned properly

→ **References and further reading material for this technology can be found on page 221**