LIVELIHOODS
SKILLS DEVELOPMENT
SECTOR

Standard Operation Procedure for Soap Making

1. Background

The Livelihoods and Skills Development Sector (LSDS) aims to enhance the economic inclusion and self-reliance of Rohingya refugees and vulnerable host communities in Cox's Bazar. Through a coordinated multi-stakeholder approach, LSDS partners implement livelihood interventions, including skills training, income-generating activities, and market-based solutions. To ensure consistency, quality, and adherence to humanitarian principles, this SOP provides standardized guidelines for LSDS partners, outlining key procedures, best practices, and compliance requirements for effective program implementation.

2. Raw Materials Procurement

Types of Raw Materials Required:

List of essential ingredients needed for both **bathing soaps** and **laundry soaps**:

- **Oils/Fats:** Palm oil, Coconut oil, Animal fats, Lauric acid
- **Lye:** Sodium hydroxide (NaOH) for saponification
- **Liquids:** Water (for dilution and mixing with lye)
- **Additives:**
  - **Preservatives** to extend shelf life
  - **Fragrance oils** for scents
  - **Colorants** for visual appeal (natural or synthetic)
- **Measurement Tools:**
  - **Thermometer** (to monitor temperature during the process)
  - **Hydrometer** (to check lye concentration)
  - **Litmus paper** (for pH testing)

• **Sourcing Strategies:** To ensure consistent quality and cost-effectiveness, raw materials should be sourced with the following considerations:

- **Local Availability:** Some raw materials can be sourced from local markets while the quality raw materials can be found in Districts like Chattogram, Rangamati, Natore etc..
- **Affordability:** Cost-efficient raw materials can be sourced at the adjacent districts. Bulk purchases might provide price advantages.
- **Quality Control:** Implement standards to check the quality of raw materials upon receipt. This includes testing for purity (e.g., lye concentration) and inspecting oils for freshness and consistency.

• **Storage and Handling:** Proper storage and handling are essential to maintain the quality of raw materials:

- **Oils and Fats:** Store in a cool, dry place, away from direct sunlight to prevent spoilage or rancidity.
- **Sodium Hydroxide (Lye):** Store in airtight containers in a well-ventilated area, away from moisture, as lye is highly reactive with water.
- **Water:** Ensure it is clean and free from impurities. Store in a sanitary container.
- **Additives (Fragrance, Colorants, Preservatives):** Store in cool, dry places, sealed tightly to avoid contamination or evaporation.
- **Tools and Instruments (Thermometer, Hydrometer, Litmus paper):** Keep clean and properly stored to ensure accuracy during use

3. Tools and Equipment

• **List of Required Tools:** Essential tools for the soap-making process include:

- **Scales** (for accurate measurement of ingredients)
- **Thermometers** (to monitor temperature during mixing and saponification)
- **Mixing bowls and sticks/spatulas** (for blending ingredients)
- **Heat source** (stove or double boiler for melting oils/fats)
- **Measuring cups/spoons** (for precise measurement of liquids and additives)
- **Molds** (for shaping the soap, such as silicone or wooden molds)
- **Cutting tools** (soap cutter or knife for cutting soap bars)
- **Protective equipment** (gloves, goggles, aprons for safety when handling chemicals like lye)

4. Safety Measures:

- Always wear **protective gear** (gloves, masks, goggles) when handling lye and other chemicals.
- Ensure **proper ventilation** to avoid inhaling fumes during the mixing process.
- Use **heat-resistant tools** and avoid using metal bowls when mixing lye with water (opt for plastic, glass, or stainless steel).
- Keep workstations clean and organized to prevent accidents.
- Clearly label chemicals and store them securely away from food and flammable materials.

5. Step-by-Step Soap-Making Process

Preparation:

- Clean and sanitize all tools and surfaces before starting the process.
- Set up the workstation in a well-ventilated area and organize the ingredients.
- Accurately measure the ingredients (oils, fats, lye, water, additives) using scales and measuring cups.

Soap Recipe:

Bathing Soap Recipe:

Ingredients:

- Palm oil
- Coconut oil
- Lauric acid
- Water
- Preservative
- Fragrance
- Sodium hydroxide

Process:

- Mix sodium hydroxide with water, ensuring that it dissolves properly, and allow it to cool down.
- Then, take the raw materials for soap-making, such as oil, fats, etc., and heat them lightly in a pot or iron pan. After that, add sodium hydroxide and mix it well (this process is called saponification). Once the saponification process is complete, the liquid mixture turns into a solid form. During the saponification reaction, add color and fragrance as needed.
- The solid soap parts are then mixed through a powder machine to form soap noodles.
- The noodles are mixed thoroughly and molded into the desired shape.
- The molded soap is then cut using a cutting machine according to the desired size.
- The cut pieces are then stamped using a stamping machine to finalize the size of the soap. This completes the soap-making process.
- The finished soap is then packaged and prepared for marketing.

Laundry Soap Recipe:

Ingredients for Soap-Making:

1. Sodium hydroxide
2. Water
3. Palm oil
4. Fats
5. Talcum powder (Magnesium sulfate)
6. Sodium silicate (anti-oxidant, hardens the soap)
7. Color
8. Lemon fragrance

Process:

- Mix sodium hydroxide with water, ensuring that it dissolves properly, and allow it to cool down.
- Then, take the raw materials for soap-making, such as oil, fats, etc., and heat them lightly in a pot or iron pan. After that, add sodium hydroxide and mix it well (this process is called

saponification). Once the saponification process is complete, the liquid mixture turns into a solid form. During the saponification reaction, add color and fragrance as needed.
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6. Quality Assurance

• Testing Procedures:

- Use **pH testing** to ensure the soap is safe for use (ideal pH range: 7-10).
- Check for **consistency** to ensure the soap has a smooth texture.
- Evaluate the **fragrance** and appearance to confirm it meets standards.
- Attain BSTI approval before proceeding with production.

• Batch Documentation:

- Keep a **record of each batch** produced, including ingredients used, date of production, and curing time.
- Use a **template** to track outcomes and any adjustments made during the process.

• Inspection:

- Regularly **inspect batches** for any defects such as cracks, uneven curing, or discoloration.
- Discard or reprocess defective soap to maintain high quality.

5. Labor-Intensive Workflow

• Division of Tasks:

- Assign roles to maximize efficiency:
  - Ingredient preparation
  - Mixing and saponification
  - Molding and cutting
  - Quality control and packaging

• Training:

- Provide **training modules** to teach workers about the soap-making process, safety measures, and their specific roles.
- Offer periodic **refreshers** to improve skills and productivity.

• Scaling Production:

- Adapt the process to **scale up** production by increasing batch sizes, adding more workers, or using larger molds as demand grows.

6. Health and Safety

• Protective Equipment:

- Workers must wear **gloves, masks, goggles, and aprons** when handling hazardous materials like lye.
- Provide **personal protective equipment (PPE)** for all staff involved in the production process.

• Chemical Safety:

- Store hazardous materials like **lye** in sealed containers, away from moisture and food.
- Use **safety data sheets (SDS)** for reference and ensure all workers are familiar with proper handling protocols.

• First Aid Measures:

- In case of burns or chemical exposure, immediately rinse the area with water and apply appropriate **first aid** (such as burn cream).
- Have a **first aid kit** readily available and train staff in emergency procedures.

• Workplace Setup:

- Ensure proper **ventilation** in the workspace to avoid inhalation of fumes.
- Install **non-slip flooring** to prevent falls during soap-making activities.
- Keep **clear evacuation routes** in case of an emergency.

7. Environmental Considerations

• Waste Management:

- Implement proper **disposal methods** for soap scraps, chemical residues, and wastewater to minimize environmental impact.
- Segregate biodegradable and non-biodegradable waste.

• Eco-friendly Practices:

- Encourage the use of **biodegradable materials** and limit synthetic additives to reduce environmental harm. Packaging of the soap should be done with Echo Friendly or biodegradable materials.

- Adopt **water-saving measures** and avoid the excessive use of water in the production process.

8. Cost Analysis and Sustainability

• Costing:

Break down the total production cost, including:

- **Raw materials** (oils, lye, additives)
- **Labor costs** (wages for workers)
- **Equipment and utilities** (tools, electricity, water)

• Affordability for Refugees:

- Ensure the final product is **cost-effective** for the target community by minimizing production costs without compromising quality.

• Revenue Models:

- Explore opportunities for selling surplus soap in **local markets** or partnering with **WASH (Water, Sanitation, and Hygiene) sector actors** to sustain the activity and generate revenue
- Incentives for the beneficiaries should follow the Volunteer Engagement Guidelines or any approved guidance from the respective CiC offices.

9. Distribution and Usage Guidelines

• Target Beneficiaries:

- Identify **primary users**, including refugees and vulnerable communities, and tailor soap products to their specific needs (e.g., bathing or laundry soap).

• Instructions for Use:

- Provide **clear instructions** on proper usage for both bathing and laundry soaps to maximize their utility and lifespan.

• Feedback Mechanisms:

- Implement **feedback systems** (e.g., surveys or interviews) to gather input from users and improve future production and distribution processes.