result in bladder re-expansion and fluid intake. Other pumps, such as battery-powered pumps or hand pumps may be used. The sweat may be pumped by the pump or pumps through the outlet tubing and through impermeable inner layer **32** to wicking outer layer **36**. From wicking outer layer **36**, the sweat may be distributed on external surface **38** of garment **10** and evaporated to thereby cool garment **10**.

[0043] Outlet tubing from each pump, for example, outlet tubing **66**, **78** and **108**, may be joined together before piercing impermeable layer **32**. Or, each outlet tubing may independently pierce impermeable layer **32**. FIG. **6**A is a schematic flow diagram of a garment **10** having two pumps **50**, two pumps **70** and one pump **92**. Outlet tubing **66**, **66**, **78**, **78**, and **108** from each of the respective pumps may join an outlet header or manifold **110**. Header **110** may pierce or pass through impermeable layer **32** at an opening **112**. Opening **112** may be sealed around header **110**. Check valves **64** may be used to prevent backflow. FIG. **6**B is a schematic flow diagram of a garment **10** having two pumps **50**, two pumps **70** and one pump **92**. Outlet tubing **66**, **66**, **78**, **78**, and **108** from each of the respective pumps may independently pass through impermeable layer **32** at multiple openings **112**. Openings **112** may be sealed around each outlet tubing. Check valves **64** may be used to prevent backflow. Outlet tubing from the pumps and/or outlet header **110** may be fastened to inner surface **34** of impermeable layer **32**. FIGS. **6**A and **6**B are exemplary only. The number of pumps used may be one or more.

[0044] At opening **112** or openings **112**, sweat flowing in the outlet tubing or outlet header may flow into a distribution system for distributing the sweat on or in the outer wicking layer **36**. FIG. **1** shows a distribution system **114** that may include a plurality of tubes with holes or perforations. The holes may allow the sweat to flow into wicking layer **36**. The cross-section of the tubing that forms distribution system **114** may be circular, semi-circular or some other cross-section.

[0045] FIGS. **7**A and **7**B are side and ends views, respectively, of one embodiment of tubing **116** for distribution system **114**. Tubing **116** may have a semi-circular cross-section. Tubing **116** may include openings **118** for the passage of liquid sweat from tubing **116** to wicking layer **36**. A flat side **120** of tubing **116** may face inward toward human **24**. Tubing **116** may be disposed so as to lie on top of wicking layer **36**, or be partially or completely embedded in wicking layer **36**. Wicking outer layer **36** may also be a surface treatment, for example, a liquid or spray that may be applied to an outer surface of impermeable inner layer **32** thereby enabling the outer surface to wick, spread, and/or distribute water over regions of the outer surface.

[0046] In FIG. **1**, outlet header **110** (FIG. **6**A) may exit layer **32** at opening **112** (shown in dashed line) in the neck area and may fluidly communicate with tubing **116***a* disposed around the bottom of head covering **16**. A vertical tubing **116***b* may lead to a tubing **116***c* that may be arranged circularly or circumferentially (partially or completely) around the top of head covering **16**. A check valve (not shown) may be included in vertical tubing **116***b* to prevent backflow. A tubing **116***d* may extend from tubing **116***a* down sleeve **90** of garment **10**. A tubing **116***e* may extend from tubing **116***a* down torso portion **104** of garment **10** to a waist tubing **116***f*. Waist tubing **116***f* may be arranged circumferentially (partially or completely) around garment **10**. Vertical leg tubing **116***g* may extend from waist tubing **116***f* to a circumferential thigh tubing **116***h*. Of course, tubing **116** may be arranged in many different ways on the exterior of garment **10**. In addition, garment **10** may include plumbing and valves configured to distribute harvested sweat to hotter surfaces where sweat evaporation may occur most effectively. Toxic environments of microbes, viruses and tiny insects, etc., may require check valves with enhanced sealing features. Such check valves may require higher opening pressures. Higher opening pressures may be supplied by, for example, a piston or pump driven by a battery-operated, electric motor or solenoid.

[0047] Wicking layer **36** may receive liquid sweat that may exit openings **118** in the network of tubing **116** that forms distribution system **114**. Wicking layer **36** may be present wherever impermeable layer **34** is present, or may be selectively used. In FIG. **1**, wicking layer **36** is shown with Xs and may be present in areas near tubing **116***a-h*.

[0048] In some embodiments, garment **10** may include one or more external reservoirs **122** (FIG. **1**). In FIG. **1**, the locations and sizes of external reservoirs **122** on garment **10** are exemplary only. External reservoir(s) **122** may be of varying capacity. An example of a capacity for external reservoir **122** is 2 liters. External reservoir **122** may be made of any material capable of holding water, for example, plastic or rubber. Reservoir **122** may be flexible or rigid. Reservoir **122** may be attached to the outer surface of garment **10** using, for example, straps or hooks. Reservoir **122** may contain water **124** and may include a fill opening for adding water therein. External reservoir **122** may be disposed exterior to impermeable layer **32** (FIG. **2**). External reservoir **122** may be fluidly connected to one or more reservoirs located interior to layer **32**, for example, internal reservoirs **62** (FIG. **3**), **88** (FIG. **4**), or **100** (FIG. **5**). FIG. **11** is a schematic fluid flow diagram of garment **10** showing external reservoir **122** connected by tubing **126** to, for example, interior reservoir **62**. Flow of water **124** from reservoir **122** may be controlled by, for example, a valve **128**.

[0049] Thus, one or more of liquid sweat **40** (FIG. **2**), condensed sweat **42** (FIG. **2**) and water **124** (from reservoir **122**) may be pumped from reservoirs internal to layer **32** to outlet tubing. As an example, in FIG. **11**, the contents (which may be one or more of liquid sweat **40**, condensed sweat **42**, and water **124**) of interior reservoir **62** may be pumped through outlet tubing **66**. In addition to pumping the contents of reservoirs internal to layer **32** to external distribution system **114** (FIG. **1**), some or all of the contents of the internal reservoirs may be redistributed in space **30** or on undergarment **28** (FIG. **2**) for re-evaporation, which may enhance cooling. Distribution in space **30** or on undergarment **28** may be helpful, for example, when garment **10** is initially donned, when the user is under-hydrated, or when the user is not sweating adequately. Inadequate sweating may result from, for example, medications taken by the user of garment **10** to resist the neurotoxic effects of chemical agents.

[0050] Redistribution in space **30** or on undergarment **28** may be accomplished by providing one or more fluid exit ports **130** (FIGS. **6**A and **6**B) in one or more outlet tubes or headers, such as outlet tubes **66**, **78**, **108** and header **110**. Fluid exit ports **130** may include mini or micro nozzles for spraying one or more of liquid sweat **40** (FIG. **2**), condensed sweat **42** (FIG. **2**) and water **124** onto undergarment **28** and/or in space **30**. Ports **130** may be sized such that a portion of the flow through the outlet tubes or headers is redistributed on skin **26** and a portion of the flow is transported to external distribution system **114**. Alternatively, separate outlet tubings may be provided from the internal reservoirs for each of: (1) flow to