- the hollow body being a vertically-oriented and cylinder-shaped tube, with the first check valve being located on a top end of the tube and the second check valve being located on a bottom end of the tube.

Also disclosed are chemical dispense systems for delivering chemicals to a semiconductor process tool. The chemical dispense systems include a cabinet containing a gas inlet directly connected to a source of an inert gas; one or more gas outlets directly connected to piping used to distribute the inert gas to chemical containers; one or more chemical inlets; one or more chemical outlets; a pump connecting the one or more chemical inlets to the one or more chemical outlets; a vent; a drain; and any of the air blanket gas conservation units disclosed above.

Also disclosed are methods of using the air blanket gas conservation units disclosed above to prevent chemical overflow to exhaust and to conserve the air blanket gas. Piping is connected to (a) one or more chemical containers and (b) to the one or more gas outlet fittings of the air blanket gas conservation unit. The first check valve is connected to exhaust or to an inert gas recapture system. The second check valve is connected to a drain or solvent recovery system. The source of the air blanket gas is connected to the gas inlet fitting. The air blanket gas is distributed through the air blanket gas conservation unit to the one or more chemical containers. The disclosed methods may include one or more of the following aspects:

- monitoring a pressure inside the air blanket gas conservation unit;
- adjusting the pressure of the air blanket gas using a pressure regulator connected between the gas inlet fitting and the source of the air blanket gas;
- recapturing air blanket gas that escapes through the first check valve in the inert gas recapture system; and
- recovering chemical that escapes through the second check valve in the solvent recovery system.

In one aspect, there is provided an air blanket gas conservation unit comprising:

a. a hollow body with a first end and a second end;

b. a gas inlet fitting through the body, the gas inlet fitting receiving the air blanket gas;

c. one or more gas outlet fittings through the body, the one or more gas outlet fittings distributing the air blanket gas;

d. a first check valve located at the first end of the body;

e. a second check valve having a lower pressure relief setting than the first check valve, the second check valve having a diameter at least 1.5 times larger than each of the one or more gas outlet fittings; and

f. a buffer zone within the hollow body between the second check valve and the one or more gas outlet fittings.

In another aspect, there is provided a chemical dispense system for delivering chemicals to a semiconductor process tool, the chemical dispense system comprising

a cabinet containing:

i. a gas inlet directly connected to a source of an inert gas;

ii. one or more gas outlets directly connected to piping used to distribute the inert gas to chemical containers;

iii. one or more chemical inlets;

iv. one or more chemical outlets;

v. a pump connecting the one or more chemical inlets to the one or more chemical outlets;

vi. a vent;

vii. a drain; and

viii. an air blanket gas conservation unit, the air blanket gas conservation unit comprising:

a. a hollow body with a first end and a second end;

b. a gas inlet fitting through the body, the gas inlet fitting connected to the gas inlet;

c. one or more gas outlet fittings through the body, the one or more gas outlet fittings connected to the one or more gas outlets;

d. a first check valve located at the first end of the body, the first check valve connected to the vent;

e. a second check valve having a lower pressure relief setting than the first check valve, the second check valve having a diameter at least 1.5 times larger than each of the one or more gas outlet fittings, the second check valve connected to the drain; and

f. a buffer zone within the hollow body between the second check valve and the one or more gas outlet fittings.

In another aspect, there is provided a method of using an air blanket gas conservation unit to prevent chemical overflow to exhaust and to conserve the air blanket gas, the air blanket gas conservation unit comprising

a. a hollow body with a first end and a second end;

b. a gas inlet fitting through the body;

c. one or more gas outlet fittings through the body;

d. a first check valve located at the first end of the body;

e. a second check valve having a lower pressure relief setting than the first check valve, the second check valve having a diameter at least 1.5 times larger than each of the one or more gas outlet fittings; and

f. a buffer zone within the hollow body between the second check valve and the one or more gas outlet fittings;

the method comprising

1. connecting piping to (a) one or more chemical containers and (b) to the one or more gas outlet fittings of the air blanket gas conservation unit;

2. connecting a first check valve to exhaust or to an inert gas recapture system;

3. connecting the second check valve to a drain or solvent recovery system;

4. connecting a source of the air blanket gas to the gas inlet fitting; and

5. distributing the air blanket gas through the air blanket gas conservation unit to the one or more chemical containers.

Notation and Nomenclature

Certain abbreviations are used throughout the following description and claims, and include: the abbreviation "PP" refers to PolyPropylene; the abbreviation "PE" refers to PolyEthylene; the abbreviation "HDPE" refers to High