CLAIMS

1. A refrigerated transport system (20) comprising:

a body (22) enclosing a refrigerated compartment, wherein the body (22) comprises: a pair of side walls (22C, 22D); a top (22A); a bottom (22B); and one or more doors (28A, 28B);

a refrigeration system (30) comprising:

a charge of refrigerant;

a compressor (36) for driving the refrigerant along a refrigerant flowpath (34);

a first heat exchanger (38) along the refrigerant flowpath and positioned to reject heat to an external environment in a cooling mode; and

a second heat exchanger (42) along the refrigerant flowpath and positioned to absorb heat from the refrigerated compartment in the cooling mode;

a detector (232) for detecting leakage of the refrigerant; and

a locking mechanism (230; 300) having a first condition locking the doors and a second condition allowing opening of the doors, wherein the locking mechanism is coupled to the detector to shift from the second condition to the first condition responsive to detection by the detector of the refrigerant outside the refrigerant flowpath, the locking mechanism including an electronically or electrically controlled supplemental lock (230; 300) which is arranged to act responsive to detecting of a refrigerant leak by the detector (232).

2. The refrigerated transport system of claim 1, further comprising:

a dilution gas source (602) coupled to the detector, wherein the dilution gas preferably consists essentially of nitrogen.

3. The refrigerated transport system of claim 2 or claim 1, further comprising:

an automatic valve (612) coupled to control flow from the dilution gas source (602).

4. The refrigerated transport system of claim 3, wherein:

the dilution gas source is coupled via the automatic valve (612) to one or more outlets (610) positioned along an equipment box duct,

wherein preferably:

the dilution gas source comprises a cylinder (604) having a first outlet and a second outlet; and

a first said automatic valve is positioned to control flow from the first outlet and a second said automatic valve is positioned to control flow from the second outlet.

5. The refrigerated transport system of any of claim 3 to claim 4, further comprising:

a controller (64; 234) coupling the detector to the automatic valve (612) to control flow from the dilution gas source (602),

preferably wherein the controller is configured to:

receive input from the detector; and

responsive to reaching a threshold, open the automatic valve.

6. The refrigerated transport system of claim 1, further comprising:

a first valve (340) along the refrigerant flowpath and a second valve (341) along the refrigerant flowpath and coupled to the detector,

wherein preferably:

the first valve and the second valve are normally closed valves coupled to the detector to close responsive to detection by the detector of the refrigerant outside the refrigerant flowpath.

7. The refrigerated transport system of any previous claim, wherein:

the locking mechanism (300) is mounted inside the refrigerated compartment.

8. The refrigerated transport system of any previous claim, further comprising one or both of:

an externally visible light (262) coupled to the detector; and

an externally audible alarm (264) coupled to the detector.

9. The refrigerated transport system of any previous claim, further comprising:

a battery-powered ventilation fan.

10. The refrigerated transport system of any previous claim, further comprising:

a first electric fan (50) positioned to drive an air flow across the first heat exchanger; and

a second electric fan (52A, 52B) positioned to drive a recirculating air flow from the refrigerated compartment across the second heat exchanger.

11. The refrigerated transport system of any previous claim, further comprising:

a battery (258), distinct from a battery (66) of a main controller (64), if any, and coupled to the detector.

12. The refrigerated transport system of any of any previous claim, being a refrigerated intermodal shipping container wherein:

the one or more doors comprise a pair of hinged doors at a first end of the body; and

the refrigeration system is mounted in an equipment box at a second end of the body opposite the first end.

13. The refrigerated transport system of any previous claim, wherein:

the detector comprises a non-dispersive infrared sensor.

14. The refrigerated transport system of any previous claim, further comprising:

a controller coupled to the detector so as to, responsive to said detecting leakage of the refrigerant, at least one of:

vent the refrigerated compartment;

introduce a dilution gas from a gas source;

lock at least one door of the one or more doors;

isolate a portion of the refrigeration flowpath; and

provide an audible and/or visible indication of the detection.

15. A method for operating the refrigerated transport system of any previous claim, the method comprising:

responsive to said detecting leakage of the refrigerant, at least one of:

venting the refrigerated compartment;

introducing a dilution gas from a gas source;

locking at least one door of the one or more doors;

isolating a portion of the refrigeration flowpath; and

providing an audible and/or visible indication of the detection.