

**Winnipeg 11 Feb 2004**

### **Canadian Science Center for Human & Animal Health**

7,000 electronic control points monitor temperature, humidity, air management systems—there are a couple of alarms every day. If you hold a door open too long, a red light flashes somewhere.

Community Liaison Committee is informed of all security incidents.

From the design and exterior appearance of the complex, it is not obvious where the BSL4 labs are.

Airtightness of the labs is constantly checked. Annual certification (Canada only) takes three weeks per lab.

#### Getting into BSL4:

1. Access corridor. Security. Winnipeg uses personal codes tapped into scrambled key pads. (The configuration of the numbers on the nine-key matrix changes randomly every time the pad is used.)
2. Outer change. Here you take off all your street clothes. Scrubs piled on racks.
3. Water shower. Submarine door. The doors are intersealed, so that you can't open two at a time. (You don't shower on the way in.)
4. Inner change or suit room. Here you put on lab underwear, scrubs, socks, inner gloves, and the suit.
  - a. The new suits are white plastic rather than blue.
  - b. The outer gloves have to be sealed to the suit's rigid round wristbands with duct tape.
  - c. The feet wear out first. They can be patched or mended with duct tape.
  - d. The zippers wear out and become imperfectly airtight, but this is not a big deal. The suit has to let air out anyway (otherwise you would suffocate). It has one-way valves.
5. Chemical decontamination shower. (You don't use this on the way in.) Like a car wash, several faucets. You keep the air hose connected as it takes about 5 minutes. Disinfectant, and water to wash away the disinfectant.
6. Biocontainment lab.
  - a. Overboots are kept by the door. You put them on when you enter, and leave them behind when you leave. They stop the suit's feet getting worn out, and also prevent suit contamination by animal faeces.
  - b. The suit has 3-4 minutes of air. You connect when you enter the lab and disconnect to move around. You know you need air when the faceplate fogs.
  - c. Equipment includes computers, microscopes, biosafety cabinets, stainless steel benches, freestanding autoclaves, fridges for materials, a fax machine (for sending your notes out)
  - d. Communication:
    - i. In BSL4 there is constant air noise from the air handling equipment inside and outside the suit. Because of this and the barrier of the suit faceplate, you have to raise your voice to talk.

- ii. There are radio mikes inside the suit helmets, enabling scientists to talk over a secure scrambled channel to others in BSL4, scientists outside, and the safety team. However they are not perfectly clear or reliable and people don't like them much.
- iii. People often use small rectangular whiteboards to communicate. They can also be used to communicate with people outside the lab, through windows.
- iv. Red light for the phone. (You can put the phone to your ear through the suit, and it is the type of phone used by deaf people, with a volume control.) You normally turn off your air to use the phone, because of the noise.
- v. There is a blue strobe alarm light.
- e. There are radio
- f. There is one camera per room in BSL4. The cameras are attached to the ceiling or high on the wall, and housed in black-glass inverted domes covered with a helmet like a salon hair dryer. As well as security, the cameras are used by scientists outside BSL4, to supervise or participate in experiments.

#### 7. Vault.

Before qualifying for BSL4 you do six months' training, including 40 visits to BSL4 with a buddy. You have to be judged reliable, competent, familiar with procedures, and able to handle emergencies. Claustrophobics drop out as soon as they put on the suit.

Remember pressure gauges near the doors to each room. These may give early warning of problems. Pressure drops by 50 or 25 pascals from room to room.

HEPA filters trap particles of the respirable range, which is 0.5 micron to 5 microns.

Thankyou letters:

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