

C. ENVIRONMENTAL LIMITS

ENABLING OBJECTIVES:

- | | |
|------|--|
| 1.11 | Describe the concept of legislated environmental limits and give three examples of monitored effluents released from our nuclear and heavy water facilities. |
| 1.12 | Describe Ontario Hydro's approach to managing its environmental obligations. |

Another piece of our operating philosophy puzzle is concerned with protecting the environment around our facilities against chronic emissions. These could potentially impair the health or well-being of the public, or cause adverse effects to animals, vegetation, aquatic life or inanimate objects.

To assess the extent of the problem we must consider many things:

- noxious gases, vapours, or particles which may contaminate food sources, or damage public or private property;
- excessive heat output to the environment;
- vibration and noise;
- unaesthetic appearance or unpleasant odours.

Vegetation may be damaged by chemical action and aquatic life can be affected by chemical addition, chemical removal, biological pollution, or thermal pollution. Even the use or disposal of water presents problems; altering the water table could cause settling of buildings or drying of wells or even change very significantly the character of the soil (certain clays especially). Considering the potential effects, it is important that all staff be vigilant for anything that can cause environmental concern. Failure to carry out our responsibility is not only immoral and possibly illegal, but will certainly bring us much embarrassment.

This section is primarily concerned with the nuclear impact on the environment.¹² We should, however, take note that at least a part of the non-nuclear impact of our facilities on the environment can be lessened if all of us, following appropriate procedures, practice the **Reduce, Reuse and Recycle** philosophy with consumed materials.

Our nuclear facilities are enormous structures and they have the potential to affect the environment adversely in many ways. As their creator and operator, we must always consider the ramifications and minimise the adverse impact. Overall, Ontario Hydro's objectives are:

- a) To **eliminate emissions** whenever practical,
- b) To **minimize emissions** by maintaining them below operating target values,
- c) To **monitor emissions** to ensure they are within applicable regulatory limits.

NUCLEAR STATION RADIOACTIVE EMISSIONS

With respect to the Nuclear Business' obligation to control radioactive emissions from the nuclear stations, our performance has consistently met the standards imposed by the AECB. One exception occurred in 1979-80 when the instantaneous limit for tritium concentration in the outfall at Pickering was exceeded. Typically, Ontario Hydro controls discharges to less than 1% of the regulatory limits set by the AECB. We monitor airborne emissions for **tritium, iodine, noble gases, and particulates**, and waterborne emissions for **tritium and gross radioactivity**.

The small amount of radioactivity released from our plants is either to atmosphere or to the lake. Within the plant a release to atmosphere is reduced significantly by dilution in the surrounding air. For the public, further dilution is provided by the exclusion zone (the last of the five barriers) around the stations. In any event, the amount and type of radioactivity which is released is carefully controlled and monitored.

In order to ensure that operating targets are achieved and maintained, an extensive program of environmental monitoring has been established. Samples are taken from fixed positions around our sites at regular intervals. Measurements are taken of both the air and water at sampling

¹² Environmental Protection will be dealt with more completely in an Environmental Awareness course.

sites. Samples are also taken of lake sediments, fish, fruit and vegetables. In addition to the monitoring carried out by Ontario Hydro, both federal and provincial regulatory agencies carry out independent sampling as well.

EMISSIONS FROM THE BRUCE HEAVY WATER PLANT

The critical emissions monitored from the Heavy Water Plant are **hydrogen sulphide (H₂S)** and **sulphur dioxide (SO₂)**. Continuous monitoring at a number of locations around the BNPD site indicate that these emissions remain within the regulatory limits.

ASSIGNMENT

1. What are the three objectives that Ontario Hydro follows to minimise the environmental impact of our facilities?

2. What are the four airborne and two water borne emissions monitored at our nuclear stations?

3. What are the two emissions monitored at the Bruce Heavy Water Plant?