



FIGURE 4.1 *Source - Pathway - Receptor Model for Waste Dump Exposure*

The preliminary step in exposure assessment is the construction of a conceptual model that represents the *exposure pathways*. The conceptual model shown in Figure 4.1 is an attempt to identify the principal exposure pathways associated with living close to a landfill.

Pathways are both **direct**, e.g. the ingestion of contaminated dust, or **indirect**, e.g. the ingestion or contact with contaminated groundwater.

*Hazard* and *risk* are frequently confused: they are not synonymous.

At the most basic level *hazard* = danger, and in the risk assessment context a *hazard* exists if a potential exists to cause harm. Conversely, *risk* is the likelihood of an adverse event occurring in response to a hazardous situation.

The *dose assessment* is achieved by estimating total environmental exposure to a particular hazardous compound identified in the Source. Compounds deriving from landfill leachate either constitute a *toxic hazard* or a *carcinogenic hazard*.

The general practice is to assume that a toxic chemical has a threshold below which toxic effects do not occur. *Toxic hazard* estimates are expressed relative to a reference dose concentration. The reference dose is an exposure that can occur over a prolonged period without ill effect. Risk estimates are based on a comparison of actual exposure to this reference dose for the particular chemical involved.

Carcinogenic compounds differ from systemic toxic compounds in that there is no lower limit for the existence of cancer hazard.