

FACULTY NOTES

The LTAs and Spinoffs are designed so that each professor can implement them in a way that is consistent with his/her teaching style and course objectives. This may range from using the materials as out-of-class projects with minimal in-class guidance to doing most of the work in class. The LTAs and Spinoffs are amenable to small group cooperative work and typically benefit from the use of some learning technology. Since the objective of the LTAs and Spinoffs is to support the specific academic goals you have set for your students, the Faculty Notes are not intended to be prescriptive. The purpose of the Faculty Notes is to provide information that assists you to take full advantage of the LTAs and Spinoffs. This includes suggestions for instruction as well as answers for the exercises.



FACULTY NOTES

SPINOFF 5D

Using the World Wide Web to Do Risk Assessment

Answers

- 1) Attributable Risk -- The difference between risk of exhibiting a certain adverse effect in the presence of a toxic substance and that risk in the absence of the substance.

Estimated Exposure Dose (EED) -- The measured or calculated dose to which humans are likely to be exposed considering exposure by all sources and routes.

Incidence Rate -- The ratio of the number of new cases over a period of time to the population at risk.

Organoleptic -- Affecting or involving a sense organ such as taste, smell, or sight.

Slope Factor -- The slope of the dose-response curve in the low-dose region. When low-dose linearity cannot be assumed, the Slope Factor is the slope of the straight line from 0 dose (and 0 excess risk) to the dose at 1% excess risk. An upper bound on this slope is usually used instead of the slope itself. The units of the Slope Factor are usually expressed as kg-day/mg.

- 2) Acetone: Reference Dose: $1E - 01$ mg/kg-day, no Slope Factor
Benzidine: Reference Dose: $3E - 03$ mg/kg-day, Slope Factor: $2.3E + 02$ kg-day/mg
Cyanide, free: Reference Dose: $2E - 02$ mg/kg-day, no Slope Factor
Harmony: Reference Dose: $1.3E - 02$ mg/kg-day, no Slope Factor
Asbestos: no Reference Dose, Slope Factor: $2.3E - 01$ kg-day/mg
- 3) Note: values current as of 8/98. Reference Dose and Slope Factor may change as further research indicates.

| Pollutant | Reference Dose | Slope Factor |
|----------------------------|----------------|--------------|
| Carbaryl | $1E - 01$ | |
| o-Chlorotoluene | $2E - 02$ | |
| Potassium Cyanide | $5E - 02$ | |
| Glyphosate | $1E - 01$ | |
| Selenium & Compounds | $5E - 03$ | |
| Styrene | $2E - 01$ | |
| Di(2-ethylhexyl) phthalate | $2E - 02$ | $1.4E - 02$ |

Site I

| Hazardous Material | Cancer Risk | Hazard Quotient |
|---------------------------|--------------------|------------------------|
| Barium | | 4.846E – 06 |
| Carbaryl | | 1.470E – 04 |
| Selenium | | 1.964E – 05 |
| Pathway Sums | | 1.715E – 04 |

Since there is no Cancer Risk and the total Hazard Quotient is less than 1, the contamination level is not considered dangerous.

Site II

| Hazardous Material | Cancer Risk | Hazard Quotient |
|---------------------------|--------------------|------------------------|
| Arsenic | 7.633E – 07 | 4.749E – 03 |
| Styrene | | 1.153E – 07 |
| Potassium Cyanide | | 6.969E – 05 |
| Glyphosate | | 4.469E – 04 |
| Pathway Sums | 7.633E – 07 | 5.266E – 03 |

Since total Cancer Risk is less than 10^{-6} and the total Hazard Quotient is less than 1, the contamination level is not considered dangerous.

Site III

| Hazardous Material | Cancer Risk | Hazard Quotient |
|---------------------------|--------------------|------------------------|
| Di(2-ethylhexal)phthalate | 1.257E – 06 | 1.257E – 02 |
| o-Chlorotoluene | | 5.166E – 05 |
| Benzoic Acid | | 2.339E – 02 |
| Pathway Sums | 1.257E – 06 | 1.262E – 02 |

The total Cancer Risk is greater than 10^{-6} the contamination level is considered dangerous.