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| **Directions:** |
| Work through all of the topics in the lesson guide, then continue to the activity and posttest. |

**Skin Hazards**Another way that toxic substances can enter your body is through the**skin**or**integument**.  Harmful environmental substances that enter our bodies mainly through the skin are numerous.  You should know that infant's and small children's skin is thinner than adults and therefore more susceptible to the hazards described in this lesson.Some of the most common are pesticides/herbicides, parasites and even the sun. Follow the lesson guides to learn more. |

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| **Pesticides and Herbicides**Pesticides and herbicides were created to help us manage pests such as harmful insects, arachnids (e.g., spiders, ticks and lice), rodents (e.g., rats and mice) and weeds.While many insects, arachnids and rodents are an important part of the environment, some are responsible for heavy destruction of farm produce. These pests also harm people with their bites or stings. Still other pests are carriers of serious diseases.Many pesticides and herbicides have been formulated to be absorbed on contact. Pesticides and herbicides can also be harmful if breathed or eaten. Unfortunately, whatever is lethal to a pest or a weed will usually cause illness in human adults and even more severe symptoms in children and pets.

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| **Insecticides** | Routes of toxicity | Signs and Symptoms | Common Brands |
| Organophosphate | Absorbed by inhalation, ingestion, and dermal exposure | Headache, excess salivation, muscle twitching, nausea, diarrhea, seizures, loss of consciousness | Supracide, Dursban, Duratox, Rampart |
| N-Methyl Carbamate  | Absorbed by inhalation and ingestion | Muscle weakness, dizziness, sweating, headache, salivation, nausea, vomiting | Landrin, Temik, Sevin, Famid, Fernos |
| Organochlorine | Absorbed by inhalation, ingestion, and dermal exposure | Sensory disturbances, headache, dizziness, nausea, hyper excitable state, convulsions | DDT, Kepone, Strobone, Pentac |
| Biological insecticides | Absorbed by inhalation, ingestion, and dermal exposure | Several cause gastrointestinal infections. Can have central nervous system (CNS) effects as well as cardiovascular effects. | Nicotine, Align, Rotacide, Dipel, Bactur, |
| **Herbicides** |  |  |  |
| Chlorophenoxy | Absorbed by inhalation, ingestion, and dermal exposure | Irritating to skin and mucous membranes. Causes vomiting, diarrhea, headache, confusion, bizarre or aggressive behavior, peculiar odor on breath. Metabolic acidosis, renal failure, irregular heartbeat | Banvel, Diamba, MCPA, MCPB |
| Pentachlorophenol | Absorbed by inhalation, ingestion, and dermal exposure | Irritation of the nose, throat, and eyes. Hyperthermia, muscle spasm, tremor, labored breathing, and chest tightness indicating serious poisoning | PCP, Chlorophen, Pentacon |
| Nitrophenolic | Absorbed by inhalation, ingestion, and dermal exposure | Sweating, thirst, fever, headache, confusion, restlessness. Characteristic bright yellow staining of the skin and hair often present with topical exposure | Nitrader, Talan, Triforce, Caldor, Basanite |
| **Pesticides** |  |  |  |
| Arsenic containing | Absorbed by inhalation, ingestion, and dermal exposure | Garlic odor of breath and feces, metallic taste in mouth, adverse GI symptoms, chronic muscle weakness, fatigue, weight loss. | Zoltox, Salvo, Jones Ant Killer |
| Fungicides | Absorbed by inhalation and ingestion. Absorbed through skin when product contains mercury. | Variable | Terraneb SP, Bravo, Clortran, HCB, Earthcide |
| Fumigants | Absorbed by inhalation, ingestion, and dermal exposure | Highly variable, many are irritants, can have serious CNS effects, can cause pulmonary edema, can cause severe hypoxia | Chloroform, Lavacide, Meth-O-Gas, Sanifume |
| Rodenticides | Absorbed by ingestion | Highly variable, can cause bleeding, pulmonary edema, cardiovascular, GI, and CNS effects | Havoc, Liqua-Tox, Rocol, Tomcat |

Federal regulations require that all pesticides and herbicides carry the following label:**KEEP OUT OF REACH OF CHILDREN**The Environmental Protection Agency has a list of safety tips to follow when pesticides or herbicides are used in or around your home. |

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| **Parasites**Parasites are organisms that are adapted to living in or in close proximity to another organism, or *host*.   While parasites rarely kill the host they feed on, they do produce varying degrees of ill effects.The following is a list of parasites that enter the body through the food we eat and by piercing the skin.   There are many parasites that afflict humans by bites, such as mosquitoes, ticks, lice, mites, fleas and hookworms, but other parasites are sometimes found in the food we eat.   Lesson two discussed how to minimize our risk to parasites in food; mainly by cleaning and cooking our food thoroughly.  Protection from parasites that enter through the skin is mainly a matter of proper control of insect pests.  Click on the Lesson Guide for pesticides to learn more about that topic.

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| **Parasites** | **Habitat** | **Disease** | **Symptoms** |
| Lice | Humans, clothing, bedding | Epidemics such as Typhus fever | Fever, headache, muscle ache, jaundice, etc. |
| Ticks | Found in woodlands, fields and shrubbery | Carries encephalitis, tick paralysis, typhus, and Lyme disease | Fever, headache, muscle pains, stiff neck, vomiting, |
| Mosquitoes | Near shallow pools of water | Malaria, Typhus, West Nile fever | Fever, headache, rashes, muscle aches, joint aches, anemia, coma |
| Fleas | Rats | Bubonic plague | High fever, chills, muscular pains, severe headache, painful swellings, swollen lymph glands |
| Horse Flies | Meadows and open grasslands; near marshy areas or slow streams | Transmits diseases from species to species | Depends on the disease |
| Toxoplasma gondii | Cat litter and raw meat | Meningitis/ pneumonia | Sensitivity to light, fever, headache, stiff neck, cough, fever, chest pain, fatigue |
| Cryptosporidium parvum | Contaminated food | Cryptosporidosis | Watery diarrhea, cramps, nausea and anorexia, lasting ten to fifteen days |
| Cyclospora | Food/water contaminated by infected  fecal matter | Cayetanensis | Watery diarrhea, with frequent sometimes explosive bowel movements |
| Giardia lamblia | Passed in the feces of infected persons | Giardiasis | May cause severe chronic diarrhea |
| Trichinella spiralis | Undercooked meat | Trichinosis | Fever, muscle soreness, pain and swelling of the muscles and eyes: failure to treat could be fatal |

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| **Sunlight**Although sunlight is the source of energy for sustaining life on our planet, ultraviolet radiation (UVR) from the sun can be harmful. UVR can cause various types of skin cancers (including deadly melanomas) and skin aging; contributes to eye-related problems such as cataracts and cancer of the eye; and suppresses the effectiveness of the body's immune system.While fairer skinned people are more susceptible to hazardous effects from UVR, everyone should take the following precautions:* Avoid exposure of infants under 6 months of age to direct sunlight
* Wear light-colored, long-sleeved shirts and pants and brimmed hats
* Use a sunscreen if prolonged exposure is unavoidable
* Wear sunglasses that block 99% to 100% of the sun's rays
* Avoid UVR exposure in highly reflective environments such as snow, sand, water and concrete
* Avoid UVR exposure at high altitudes and at times when UVR levels are high such as summer and midday
* Avoid sunlamps and tanning beds
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