

# Potential Sources of Contamination Help Guide

Source Name	Source Category	Associated Chemicals	Health, Environment or Aesthetic Contaminant
Pesticide/fertilizer/petroleum storage and transfer areas	Agriculture	pH, NN, SOC, VOC	Hydrocarbons; oil-field brines (highly mineralized salt solutions)
Confined Animal Feeding Operations	Agriculture	NN, MP, TO	Livestock sewage wastes; nitrates; phosphates; chloride; chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests on livestock; coliform and noncoliform bacteria; viruses
Animal Feedlots	Agriculture	NN, MP, TO	Livestock sewage wastes; nitrates; phosphates; chloride; chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests on livestock; coliform and noncoliform bacteria; viruses
Farm chemical distributor	Agriculture	NN, VOC, SOC, pH	Pesticides; fertilizer; gasoline and motor oils from chemical applicators
Fertilizer Application	Agriculture	NN	
Manure spreading or Storage	Agriculture	NN, MP, T, TO	Livestock sewage wastes; nitrates
Drainage tile (agricultural)	Agriculture	NN	Pesticides; fertilizer; bacteria
Crops, corn, soybean, wheat	Agriculture	NN, SOC, MP	Pesticides; fertilizer; gasoline and motor oils from chemical applicators
Crops: other	Agriculture	NN, MP, SOC	Pesticides; fertilizer; gasoline and motor oils from chemical applicators
Animal Burial Grounds	Agriculture	MP, TO	Livestock sewage wastes; nitrates; phosphates; chloride; chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests on livestock; coliform and noncoliform bacteria; viruses
Fertilizer Storage	Agriculture	NN	
Slaughterhouses	Agriculture	MP, TO, T, SOC, D	
Crops: orchards	Agriculture	NN, SOC	Pesticides; fertilizer; gasoline and motor oils from chemical applicators
Crop Irrigation	Agriculture	NN, MP, T	Pesticides; fertilizer; gasoline and motor oils from chemical applicators
Dairy Farms	Agriculture		
Other animal facilities	Agriculture	MP	
Drainage canals (agricultural)	Agriculture	T	Pesticides; fertilizer; bacteria
Greenhouses/Nurseries	Agriculture	MP, NN	
Silviculture (logging)	Agriculture	T, pH, VOC	
Pasture	Agriculture	MP, SOC	
Other (specify source)	Agriculture		
Railroad Tracks and Yards	Commercial	pH, M, VOC, SOC	Diesel fuel; herbicides for rights-of-way; creosote for preserving wood ties
Leaking Underground Storage Tank	Commercial	pH, VOC	
Other (Highway and Road Bulk Transportation)	Commercial		
Dry cleaners	Commercial	VOC, SOC	Solvents (perchloroethylene, petroleum solvents, Freon); spotting chemicals (trichloroethane, methylchloroform, ammonia, peroxides, hydrochloric acid, rust removers, amyl acetate)
Underground Storage Tanks	Commercial	pH, VOC	Heating oil; diesel fuel; gasoline; other petroleum products; other commercially used chemicals
Above Ground Storage Tanks	Commercial	pH, VOC	Heating oil; diesel fuel; gasoline; other petroleum products; other commercially used chemicals
Historic gas stations	Commercial	pH, M, VOC	
Golf courses	Commercial	VOC, SOC, pH	Fertilizers; herbicides; pesticides for controlling mosquitoes, ticks, ants, gypsy moths and other pests
Junk yards, scrap and auto	Commercial	pH, VOC, SOC, M, HM	
Sawmills and planers	Commercial	pH, VOC, SOC	Treated wood residue (copper quinolate, mercury, sodium borate); tanner gas; paint sludges; solvents; creosote; coating and gluing wastes
Airports/Abandoned airfields	Commercial	pH, VOC	Jet fuels; deicers; diesel fuel; chlorinated solvents; automotive wastes; heating oil; building wastes
Fleet/truck/bus terminals	Commercial	M, VOC, HM, SOC, pH	Fuel tanks; repair shop wastes; other hazardous and nonhazardous wastes
Pest control company	Commercial	VOC, SOC	Pesticides
Heating oil companies	Commercial	pH, VOC	Heating oil; wastes from truck maintenance areas
Utility Substation Transformers	Commercial	pH, VOC, SOC	PCBs from transformers and capacitors; oils; solvents; wood preservatives (creosote and pentachlorophenol); sludges; acid solution; metal plating solutions (chromium, nickel, cadmium); herbicides from utility rights-of-way
Auto repair shops	Commercial	pH, M, VOC, HM, SOC	Waste oils; solvents; acids; paints; automotive wastes; miscellaneous cutting oils
Gas Stations	Commercial	pH, M, VOC, SOC	Oils; solvents; miscellaneous wastes

Research laboratories	Commercial	M, VOC, SOC	X-ray developers and fixers; infectious wastes; radiological wastes; biological wastes; disinfectants; asbestos; beryllium; solvents; infectious materials; drugs; disinfectants (quaternary ammonia, hexachloroethane, peroxides, chlorhexidine, bleach); miscellaneous chemicals
Construction areas	Commercial	M, T, pH, VOC, SOC, HM	Solvents; asbestos; paints; glues and other adhesives; waste insulation; lacquers; tars; sealants; epoxy waste; miscellaneous chemical wastes
Repair Shops (engine, appliances, etc.)	Commercial	pH, VOC, SOC	Waste oils; solvents; acids; paints; automotive wastes; miscellaneous cutting oils
Tire Dumps	Commercial	M	
Demolition areas	Commercial	M, T, pH, VOC	Solvents; asbestos; paints; glues and other adhesives; waste insulation; lacquers; tars; sealants; epoxy waste; miscellaneous chemical wastes
Hospitals	Commercial	R, VOC, MP, D	X-ray developers and fixers; infectious wastes; radiological wastes; biological wastes; disinfectants; asbestos; beryllium; dental acids; miscellaneous chemicals
Landscaping firms	Commercial	VOC, pH, SOC, NN	Fertilizers; herbicides and other pesticides used for lawn and garden maintenance
Body shops	Commercial	VOC, pH	Waste oils; solvents; acids; paints; automotive wastes; miscellaneous cutting oils
Equipment rental/repair shop	Commercial	pH, M, VOC	
Cemeteries	Commercial	M, SOC, pH	Leachate; arsenic; lawn and garden maintenance chemicals
Hardware/lumber/parts stores	Commercial	VOC, SOC, HM, M	Hazardous chemical products in inventories; heating oil and forklift fuel from storage tanks; wood-staining and treating products such as creosote, chlorophenolic compounds, chromium, copper, and arsenic
Funeral services and crematories	Commercial	M, MP, SOC, HM, VOC	Formaldehyde; wetting agents; fumigants; solvents
Lawn/farms stores	Commercial	VOC, SOC, NN	Fertilizers; herbicides and other pesticides used for lawn and garden maintenance
Campgrounds	Commercial	MP, SOC, VOC, pH	Septate; gasoline; diesel fuel from boats; pesticides for controlling mosquitoes, ants, ticks, gypsy moths and other pests; household hazardous wastes from recreational vehicles (RVs)
Paint stores	Commercial	M, VOC, SOC	Paints; paint thinners; lacquers; varnishes; other wood treatments
Waste Incinerators	Commercial	H, HM, VOC, SOC	
Photo processing/printing	Commercial	M, VOC, SOC	Biosludges; silver sludges; cyanides; miscellaneous sludges
Print shops	Commercial	VOC, SOC	Solvents; inks; dyes; oils; photographic chemicals
Furniture and fixtures manufacturers	Commercial	VOC, SOC	Paints; solvents; varnishes; degreasing sludges; solvent recovery sludges
Printer/publisher	Commercial	VOC, SOC	Solvents; inks; dyes; oils; miscellaneous organics; photographic chemicals
Boat services/repair/refinishing	Commercial	pH, VOC, NN, M, HM	Diesel fuels; oil; septate from boat waste disposal areas; wood preservative and treatment chemicals; paints; waxes; varnishes; automotive wastes
Car washes	Commercial	pH, VOC	Soaps; detergents; waxes; miscellaneous chemicals
Furniture repair and finishing shops	Commercial	VOC, SOC	Paints; solvents; degreasing and solvent recovery sludges
Rust Proofers	Commercial	M, VOC, SOC	
Veterinary offices	Commercial	MP, R	Solvents; infectious materials; vaccines; drugs; disinfectants (quaternary ammonia, hexachloroethane, peroxides, chlorhexidine, bleach); x-ray developers and fixers
Car dealerships	Commercial	pH, VOC	Automotive wastes; waste oils; solvents; miscellaneous wastes
Parking lots/malls	Commercial	VOC, pH	
Landscaping (Commercial)	Commercial		
Welding Shops	Commercial	M, VOC	Oxygen, acetylene
Nursing Homes	Commercial	MP, D	
Office building/complexes	Commercial	pH, VOC, SOC	Building wastes; lawn and garden maintenance chemicals; gasoline; motor oil
Marina/boat docks	Commercial	pH	Diesel fuels; oil; septate from boat waste disposal areas; wood preservative and treatment chemicals; paints; waxes; varnishes; automotive wastes
Medical/dental offices/clinics	Commercial	MP, D, R	X-ray developers and fixers; infectious wastes; radiological wastes; biological wastes; disinfectants; asbestos; beryllium; dental acids; miscellaneous chemicals
Laundromats	Commercial	VOC, SOC	Detergents; bleaches; fabric dyes
Aquiculture/fishing lakes	Commercial	NN, MP, TO	
Schools (includes colleges)	Commercial		
Recreational vehicle/mini storage	Commercial	pH, VOC	
Pharmacies	Commercial	VOC, SOC	Spilled and returned products
Prisons	Commercial		
Other (specify source)	Commercial		
CERCLIS	Database	HM, M, VOC, SOC, R	
Coal Dams	Database	HM, M, T, pH	
Historic Spills (USCG, WVDHSEM)	Database		

Solid Waste Facilities	Database	HM, M, VOC, SOC, NN	
Chemical Spills	Industrial	pH, M, VOC, SOC	
Clandestine Dumping	Industrial	M, VOC, SOC, TO, HM	
Chemical Manufacture	Industrial	pH, R, M, VOC, SOC	
Landfills: hazardous wastes	Industrial	pH, M, VOC, SOC	Leachate; hazardous and nonhazardous wastes; nitrates
Chemical Landfills	Industrial	pH, M, VOC, SOC	Leachate; hazardous and nonhazardous wastes; nitrates
Industrial pipelines	Industrial	pH, M, VOC	Corrosive fluids; hydrocarbons; other hazardous and nonhazardous materials and wastes
Hazardous waste storage, treatment, recycling	Industrial	pH, R, M, VOC, SOC	
Chemical/petroleum pipelines	Industrial	pH, M, VOC, SOC	
Chemical Drums/Storage	Industrial	pH, M, VOC, SOC	Pesticides; fertilizer residues
Lagoon/Pond/Pit	Industrial	VOC, pH, SOC	Sewage wastewater; nitrates or other liquid wastes; microbiological contaminants; Hazardous and nonhazardous liquid wastes; septate; sludge
Plastics/synthetics producers	Industrial	VOC, SOC, M	Solvents; oils; miscellaneous organics and inorganics (pHenols, resins); paint wastes; cyanides; acids; alkalis; wastewater treatment sludges; cellulose esters; surfactant; glycols; pHenols; formaldehyde; peroxides; etc.
Tanneries	Industrial	VOC, TO, M	
Foundries and metal fabricators	Industrial	M, HM, VOC, SOC, pH	Paint wastes; acids; heavy metals; metal sludges; plating wastes; oils; solvents; explosive wastes
Wells: oil and gas	Industrial	pH, M, VOC	Brines associated with oil and gas operations; drilling fluids/muds, diesel/gasoline fuels and other petroleum products
Landfills: Unregulated dumps	Industrial	pH, M, VOC, SOC, TO	
Fuel Oil Distributors	Industrial	pH, VOC	
Petroleum production and storage facilities	Industrial	pH, M, VOC	Hydrocarbons; oil-field brines (highly mineralized salt solutions)
Mining: Surface	Industrial	M, T	Mine spoils or tailings that often contain metals; acids; highly corrosive mineralized waters; metal sulfides
Paper Mills	Industrial	M, VOC, HM, SOC, TO	Metals; acids; minerals; sulfides; other hazardous and nonhazardous chemicals
Wells: Injection	Industrial	M, VOC, pH, SOC	Highly toxic wastes; hazardous and nonhazardous industrial wastes; oilfield brines
Wells: brine injection	Industrial	M, VOC, pH	Highly toxic wastes; hazardous and nonhazardous industrial wastes; oilfield brines
Landfills: Industrial non hazardous	Industrial	M, VOC, TO	Leachate; organic and inorganic chemical contaminants; wastes from households and businesses; nitrates; oils; metals
Material stockpiles (coal, metallic ores, pHospHates, gypsum)	Industrial	M, HM, T	Acid drainage; other hazardous and nonhazardous wastes
Surface Impoundments	Industrial	VOC, TO, M, pH	
Metal finishing/plating	Industrial	M, VOC, SOC	
Wood preserving/treatment facilities	Industrial	M, VOC, SOC	Wood preservatives; creosote; chloropHenolic compounds; metals
Sawmills	Industrial	pH, VOC	Treated wood residue (copper quinolate, mercury, sodium bazide); tanner gas; paint sludges; solvents; creosote; coating and gluing wastes
Asphalt plants	Industrial	pH, VOC	Petroleum derivatives
Pharmaceutical Manufacturers	Industrial		
Public Utilities (pHone, gas, electric power)	Industrial	M, VOC, SOC	PCBs from transformers and capacitors; oils; solvents; wood preservatives (creosote and pentachloropHenol); sludges; acid solution; metal plating solutions (chromium, nickel, cadmium); herbicides from utility rights-of- way
Electroplaters	Industrial	M, VOC, HM, SOC	Boric, hydrochloric, hydrofluoric, and sulfuric acids; sodium and potassium hydroxide; chromic acid; sodium and hydrogen cyanide; metallic salts
Permitted Discharge Pipe (outfall)	Industrial	ALL	
Machine and metalworking shops	Industrial	M, VOC, HM, pH, SOC	Solvents; metals; miscellaneous organics; sludges; oily metal shavings; lubricant and cutting oils; degreasers (tetrachloroethylene); metal marking fluids; mold-release agents
Stone, clay and glass manufacturers	Industrial	M	Solvents; oils and grease; alkalis; acetic wastes; asbestos; heavy metal sludges; pHenolic solids or sludges; metal-finishing sludge
Industrial Parks	Industrial		
Metal and Drum cleaning/reconditioning	Industrial	M, VOC, SOC	
Textile Manufacturers	Industrial		
Cement/concrete plants	Industrial	pH, VOC, HM, SOC	
Quarry	Industrial	M, T, pH, VOC	

Electrical / electronic manufacturing	Industrial	M, VOC, HM, SOC	Cyanides; metal sludges; caustics (chromic acid); solvents; oils; alkalis; acids; paints and paint sludges; calcium fluoride sludges; methylene chloride; perchloroethylene; trichloroethane; acetone; methanol; toluene; PCBs
Food Processors	Industrial		
Communication Equipment Manufacturers	Industrial	M, VOC, HM, SOC	Nitric, hydrochloric, and sulfuric acid wastes; heavy metal sludges; copper-contaminated etchant (e.g., ammonium persulfate); cutting oil and degreasing solvent (trichloroethane, Freon, or trichloroethylene); waste oils; corrosive soldering flux; paint sludge; waste plating solution
Gravel pits	Industrial	pH	
Illegal Dump	Municipal	pH, M, VOC, SOC	
Historic waste dumps/landfills	Municipal	M, VOC, SOC, NN	
Sewer Lines	Municipal	M, VOC, MP, TO	Municipal wastewater, sludge; treatment chemicals
Landfills/municipal	Municipal	M, VOC, HM, SOC, NN	Leachate; organic and inorganic chemical contaminants; wastes from households and businesses; nitrates; oils; metals
Storm water basins/drains (injection well)	Municipal	M, VOC, MP	
Wells: abandoned	Municipal	VOC, SOC, MP, pH, NN	Surface runoff; effluents from barnyards, feedlots, organic chemicals and metals, septic tanks, or cesspools; gasoline; used motor oil; road salt
Radioactive waste disposal sites	Municipal	R, M, HM, VOC, SOC	Radioactive wastes from medical facilities, power plants, and defense operations; radionuclides (uranium, plutonium)
Combined Sewer Overflows	Municipal	MP, TO, VOC, pH	Municipal wastewater; sludge; treatment chemicals; urban runoff; gasoline; oil; other petroleum products; road salt; microbial contaminants
Highway	Municipal	pH, VOC, M	Herbicides in highway rights-of-way; road salt (sodium and calcium chloride); road salt anti-caking additives (ferris ferrocyanide, sodium ferrocyanide); asphalt/tar; road salt anti-corrosives (pHosphate and chromate); automotive wastes
Railroad Tracks (right of way)	Municipal	M, VOC, SOC, pH	Diesel fuel; herbicides for rights-of-way; creosote for preserving wood ties
Railroad yards/maintenance/fueling areas	Municipal	pH, VOC, SOC, HM, M	Diesel fuel; herbicides for rights-of-way; creosote for preserving wood ties
Military Base (past and present)	Municipal	pH, R, M, VOC, SOC	
Artificial ground water recharge areas	Municipal	MP	Storm water runoff; excess irrigation water; stream flow; cooling water; treated sewage effluent; other substances that may contain contaminants, such as nitrates, metals, detergents, synthetic organic compounds, bacteria, and viruses
Sewage sludge/Biological Solids application	Municipal	M, VOC, MP, TO	
Wastewater application	Municipal	MP, D	
Maintenance areas (general)	Municipal	VOC, M, SOC, pH	Waste oils
Vault toilets	Municipal	MP, NN, D	
Wastewater Treatment Plant	Municipal	MP, D	
Recycling/reduction facilities	Municipal	M, VOC, HM, SOC	Residential and commercial solid waste residues
Sewage Treatment Impoundments	Municipal	MP, NN, D	
Storm Drains	Municipal	M, VOC, MP, pH	Urban runoff; gasoline; oil; other petroleum products; road salt; microbiological contaminants
Storm water basins/drains	Municipal	M, VOC, MP	Urban runoff; gasoline; oil; other petroleum products; road salt; microbiological contaminants
Right-of-ways (herbicide use areas)	Municipal	VOC, SOC	
Waste transfer/recycling stations	Municipal	pH, M	Residential and commercial solid waste residues
Composting facility/yard wastes	Municipal	MP, TO, SOC	
Incinerators (municipal)	Municipal	M, HM	
Road maintenance depots/deicing operations	Municipal	pH, VOC, M	Herbicides in highway rights-of-way; road salt (sodium and calcium chloride); road salt anti-caking additives (ferris ferrocyanide, sodium ferrocyanide); asphalt/tar; road salt anti-corrosives (pHosphate and chromate); automotive wastes
Historic railroad right-of-ways	Municipal	M, pH	
Park lands	Municipal	NN, SOC	Fertilizers; herbicides, insecticides
Schools	Municipal	SOC, D, VOC, pH	Solvents; pesticides; acids; alkalis; waste oils; machinery/vehicle servicing wastes; gasoline and heating oil from storage tanks; general building wastes
Fire Stations	Municipal	pH, VOC	
Managed forest	Municipal	SOC	
Swimming Pools	Municipal	Chlorine, D	Swimming pool chemicals
Septic Systems (discharging to subsurface)	Residential	M, VOC, SOC, TO, NN	Coliform and noncoliform bacteria; viruses; nitrates; heavy metals; synthetic detergents; cooking and motor oils; bleach; pesticides; paints; paint thinner; photographic chemicals; swimming pool chemicals; septic tank/cesspool cleaner chemicals; elevated levels of chloride, sulfate, calcium, magnesium, potassium, and phosphate

Septic Systems (leach field)	Residential	MP, VOC, SOC, TO, NN	Coliform and noncoliform bacteria; viruses; nitrates; heavy metals; synthetic detergents; cooking and motor oils; bleach; pesticides; paints; paint thinner; photographic chemicals; swimming pool chemicals; septic tank/cesspool cleaner chemicals; elevated levels of chloride, sulfate, calcium, magnesium, potassium, and pH
Pesticide Application Residential (single family homes)	Residential	VOC, SOC	Pesticide
Residential (multi-units)	Residential	VOC, NN, TO, MP	Swimming pool maintenance chemicals; pesticides for lawn and garden maintenance and cockroach, termite, ant, rodent, and other pest control

**Key to Associated Chemicals:**

MP- Microbiological Pathogens: Total/Fecal Coliform, Viruses, Protozoa  
 NN - Nitrate/Nitrite  
 VOC- Volatile Organic Compounds  
 HM - Heavy Metals  
 M - Metals  
 SOC- Synthetic Organic Compounds  
 T - Turbidity  
 TO - Taste and Odor precursors  
 PH - Petroleum Hydrocarbons  
 R - Radionuclides  
 D - Disinfection byproducts  
 ND - Not Determined

\*\*\*The information in this help guide originated from the **Supplemental Guide III-Potential Sources of Significant Contamination** provided by the West Virginia Bureau for Public Health, Source Water Assessment and Protection Program, in collaboration with key stakeholders and partners, July 2015.