



MANAGING TOXIC EXPOSURES IN EMERGENCY SITUATIONS

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PHASES OF CARE

FOR PATIENTS IN HOSPITAL SETTING, AFTER DECONTAMINATION AT SCENE

- Safety** - Secure the scene and responder safety.
- Stabilization** - Address immediate life-threatening conditions.
- Assessment** - Comprehensive patient evaluation.
- Decontamination** - Reduce toxin absorption.
- Enhanced Elimination** - Speed up the removal of the toxin.
- Re-Assessment** - Monitor and adjust treatment as needed.

1. RESPONDER SAFETY

Initial responders must prioritize their safety by:

- Recognizing potential toxic environments
- Utilizing appropriate PPE
- Decontaminating effectively

2. STABILIZATION

Address immediate life-threatening conditions before addressing possible toxic exposure

Industry	Exposure(s)
Artificial nail application/removal	acetonitrile, methacrylate
Auto body painting	isocyanate
Battery recycling	lead/cadmium fumes
Bathtub refinish/paint stripping	methylene chloride
Cement manufacture	sulfur dioxide
Concrete application	chromic acid
Fermentation operation	CO2
Fire	CO, cyanide, acrolein
Gas shield welding	nitrogen dioxide
Indoor forklift	CO
Manure pit/Sewage operation	hydrogen sulfide
Metal plating	cyanide
Microchip etching	hydrofluoric acid
Rubber cement use	n-Hexane
Tobacco harvest	nicotine poisoning
Welding contaminated material	phosgene

3. CLINICAL ASSESSMENT AND MANAGEMENT

History	Exam	Vitals	Studies
What When How How long How much	Neuro Mental Status Pupils Tone Reflexes Cardiovascular Perfusion Respiratory Respirations Lung Sounds Abd Bowel Sounds Bladder Skin Color Track Marks Dry/Wet	Tachy vs Brady Hyper/ Hypotension Hypoxia? Fever?	Glucose EKG (Rate, Rhythm QRS, R in AvR, QTc) Chemistry Electrolyte derangement Acidosis Pregnancy Ethanol Acetaminophen Salicylate Urine Drug Screen Serum Osm or Toxic Alcohols

TOXIC EXPOSURE CONSIDERATIONS

Toxic exposure should be considered if:

- There is a known exposure.
- The site is associated with chemical storage or usage.
- Multiple patients present with similar symptoms.

4. DECONTAMINATION TECHNIQUES

Methods depend on the type of exposure and include:

- Removing clothing
- Flushing exposed skin and eyes
- Charcoal, whole bowel irrigation (less commonly gastric lavage for ingestions).

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Toxidrome	Vital Signs	Pupils	Skin	Mental Status
Opioid	↓RR, relative ↓ otherwise	Constricted	Normal	Depressed
Sedative-Hypnotic	Normal to depressed	Normal	Normal	Depressed
Cholinergic	↓HR	Constricted	Diaphoresis	Depressed, confused, seizures
Anticholinergic	↑HR, ↑/-BP, ↑ Temp	Dilated	Dry	Depressed, confused, hallucinations, seizures
Sympathomimetic	Increased	Dilated	Diaphoresis	Alert, agitated, seizures
Hallucinogenic	Normal to increased	Dilated	Variable	Confused, Hallucinations

Administration of Antidotes

Toxin	Antidote
Acetaminophen	N-acetylcysteine
Anticholinergics	Physostigmine
B-Blockers	Glucagon/Insulin
Benzos	Flumazenil
CO	Oxygen
Cyanide	Hydroxocobalamin
Digoxin	Digibind
Ethylene glycol/Methanol	Fomepizol
INH	B6/Pyridoxine
Opioids	Naloxone
Organophosphates/ Pesticides	Atropine, Pralidoxime
TCA	Sodium bicarbonate

5. ENHANCEMENT OF ELIMINATION

Techniques to enhance toxin elimination include:

- Saline diuresis
- Alkalinizing urine
- Dialysis
- Chelation therapy

SUPPORTIVE CARE

- Maintaining airway, breathing, and circulation.
- Using pressors and antiarrhythmics as needed.
- Managing seizures and providing anxiolysis and anti-emetics.

SUMMARY

The management of toxic exposures in emergency settings requires a systematic approach that includes recognition, safety measures, comprehensive clinical assessment, and specific management strategies involving decontamination, antidote administration, and supportive care.

Consult Poison Control: 800-222-1222

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