

Decontaminating the Poisoned Patient

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Pet Poison Helpline

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Decontamination is meant to inhibit or minimize further toxicant absorption and to promote excretion or elimination of toxicant.¹ Types of decontamination include ocular, dermal, inhalational, injection, GI, forced diuresis, and surgical removal.²

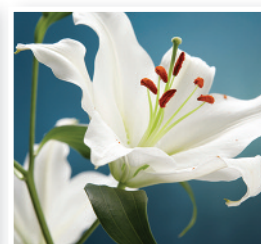
✓ Ocular decontamination

- If ocular exposure to a corrosive agent (eg, drain or oven cleaners) occurs, instruct owners to flush the eye at home with physiologic saline or tap water for 15–20 minutes before seeking veterinary attention.
 - This is imperative to avoid secondary corneal injury.
 - Necessary pet restraint methods often prevent owners from adequately performing ocular decontamination.
- If ocular exposure to an irritant occurs, instruct owners to flush the eye at home as described above.
 - Any change in condition (eg, ocular discharge, pruritus, rubbing, pupil size, blepharospasm, inflammation) warrants immediate veterinary attention.²
- Instruct owners not to apply salves or ointments and to prevent any eye rubbing until the pet receives veterinary care.

✓ Dermal decontamination

- Remove toxicant from fur or skin to prevent reexposure (secondary to grooming) and transdermal absorption.
- Advise handlers to use protective gear when necessary (eg, around corrosives, organophosphates, pyrethrins) while bathing the patient.²

MORE ►



How I Treat The Poisoned Patient

- Ocular decontamination
- Dermal decontamination
- Inhalational decontamination
- GI decontamination

Types of decontamination include ocular, dermal, inhalational, injection, GI, forced diuresis, and surgical removal.²

- Many owners are unable to restrain cats for adequate bathing, and veterinary attention is often required.
- Use degreasing liquid dish soap to fully remove oil-based substances (eg, pyrethrins, glow sticks, essential oils).
- Do not use neutralizing agents (eg, acid for alkaline exposure), as these can cause a chemical reaction that exacerbates dermal injury.²
- With acidic or alkaline exposures, decontaminate gently; use copious tepid water for 15–20 minutes.
 - Do not use high-pressure sprays and scrubbing.
- Thermoregulate the patient following decontamination.

✓ Inhalational decontamination

- Remove patient from the source of exposure.
- Evaluate patient for severity of hypoxemia (based on pulse oximetry, arterial blood gas analysis).²
 - Often, removal from the source and adequate ventilation are sufficient.
- If necessary, provide oxygen therapy.
- Ensure that the area of exposure is appropriately ventilated to prevent reexposure.
- Be aware of public health risks associated with certain toxicants.
 - During zinc phosphide rodenticide toxicosis decontamination, pet owners, support staff, and veterinarians can be exposed to phosphine gas in the dog's vomitus. Emesis induction must occur in a well ventilated area.
- Educate clients on the effects of inhalational toxins (eg, fragrances, Teflon) on birds.

✓ GI decontamination

- For GI decontamination, which is most common, consider emesis induction (Table 1), gastric lavage, whole bowel irrigation, and the use of activated charcoal and cathartics.
- Take history of exposure (eg, timing, toxin) and evaluate the patient (eg, for status, medical history) to determine whether GI decontamination is appropriate (Table 2).
- Consider appropriate use of and contraindications for emesis induction.
 - Salts, liquid dish soaps, mustards, and syrup of ipecac are not generally recommended.
 - For dogs, the use of hydrogen peroxide and apomorphine is appropriate.
 - Hydrogen peroxide, which acts as an emetic by direct gastric irritation, is the only recommended at-home emetic agent for owners.
 - The use of α -adrenergic agonists as an emetic agent in dogs is not routinely recommended, as they are typically not as effective as hydrogen peroxide or apomorphine.
 - For cats, there are no current recommended at-home emetic agents.
 - The use of hydrogen peroxide is not recommended because of risk for hemoptysis.
 - In cats, an α -adrenergic agonist (eg, xylazine, dexmedetomidine) should be used.
 - Yohimbine or atipamezole can be used to reverse severity of sedation.
- If emesis induction is unproductive or contraindicated (eg, from severe clinical signs such as obtundation, seizures, coma), consider gastric lavage to remove gastric contents.

Table 1 Emesis Induction: Indications & Contraindications

Emesis Only Should Be Performed

With recent ingestion (<1 hour) in asymptomatic patients

With unknown time of ingestion in asymptomatic patients

When a product known to stay in the stomach for a long time (eg, grapes, raisins, chocolate, xylitol gum) is ingested by asymptomatic patients

Emesis Should Not Be Performed

With corrosive toxicant ingestion (eg, lye, ultra-bleach, batteries, oven-cleaning chemicals)

With hydrocarbon toxicant ingestion (eg, tiki-torch oil, gasoline, kerosene)

In symptomatic patients (eg, trembling, agitated, seizing, hyperthermic, hypoglycemic, weak, collapsed)

In patients with underlying disease predisposing them to aspiration pneumonia (eg, megaesophagus, history of aspiration pneumonia, laryngeal paralysis)

AC = activated charcoal

Table 2 Appropriate Emetic Agents & Toxicology Drugs Commonly Used

<i>Emetic Agent</i>	<i>Where It Works</i>	<i>Dose</i>	<i>Use in Indicated Species Only</i>
Hydrogen peroxide 3%	Local gastric irritant	1–5 mL/kg PO, up to 2 times, not to exceed 50 mL in dogs	Dogs
Apomorphine	Chemoreceptor trigger zone	0.02 mg/kg IV; 0.04 mg/kg IM; crushed tablet subconjunctivally. Can be repeated at titrated dose. If excessively sedated, can consider reversal with naloxone.	Dogs
Xylazine	Centrally acting	0.44 mg/kg IM	Cats
Activated charcoal	Binds directly to the toxicant in the GI tract	1–5 g/kg PO. The first dose should ideally contain a cathartic (eg, sorbitol); however, with multiple doses, the remaining doses should not contain a cathartic	Dogs Cats
Yohimbine	Reversal of α -adrenergic agonists	0.1 mg/kg IV slow to effect	Cats
Atipamezole	Reversal of α -adrenergic agonists	0.05–0.2 mg/kg IM or IV	Cats

- Although labor intensive, gastric lavage is warranted in severely affected patients, for life-threatening ingestion, and with certain toxicants that have a narrow margin of safety (eg, calcium channel blockers, baclofen, metaldehyde, organophosphates).
- Consider use of AC and cathartics that prevent further systemic absorption of the toxicant.²
 - While rarely used in human medicine, AC is considered a primary treatment for the poisoned veterinary patient.
 - Administration of AC is contraindicated with toxicants unable to bind to it, such as alcohols (eg, ethylene glycol, xylitol, methanol) and heavy metals.
 - AC is also contraindicated for such toxicants as hydrocarbons or corrosives.
 - Multiple doses of AC (with additional doses devoid of a cathartic) are warranted with toxicants that undergo enterohepatic recirculation when the product is sustained-release (eg, certain prescription medications) or when the toxicant has a long half life (eg, naproxen, 72 hours).

- Patients receiving multiple doses of AC require periodic electrolyte monitoring because of the rare risk for hypernatremia.
- Patients at risk for hypernatremia include dehydrated patients or those with free water loss (eg, diabetes mellitus, renal disease, excessive panting, vomiting, polyuria).
 - Administer antiemetic (eg, maropitant) or fluid therapy (SC or IV) to patients receiving AC to prevent fluid losses contributing to hypernatremia.
 - Obtain baseline sodium levels.

Decontamination should be considered a primary treatment. Knowledge of the underlying mechanism of action, pharmacokinetics (eg, absorption, distribution, metabolism, excretion), and toxic dose of the toxicant is imperative in determining appropriate decontamination and therapy for the patient. ■ **cb**

See **Aids & Resources**, back page, for references & suggested reading.