

# Potpourri hazards in cats

by

Jill A. Richardson, DVM

Liquid potpourris are popular household fragrances, especially during the holiday season. But many people don't know that these products can be hazardous. Cats exposed to liquid potpourris can develop severe oral, dermal and ocular damage. Since 1995, veterinarians at the ASPCA Animal Poison Control Center (APCC) have consulted on more than 125 cases of cat exposure to liquid potpourri products (ASPCA APCC Database: Unpublished data, 1999). Exposed cats exhibited hypersalivation (51%), hyperthermia (42%), vomiting or retching (40%), depression (38%), dyspnea and abnormal respiratory sounds (37%), and oral ulcers (35%). Fortunately, with prompt, aggressive treatment and good supportive care, most cats will recover completely. Dogs also are affected by liquid potpourri, but the signs seen in dogs don't seem as severe. Cats may be at greater risk of exposure since liquid potpourri containers and simmer pots are usually kept on countertops or other areas where cats have easy access.

Liquid potpourris can be purchased at most grocery and retail stores. Potpourri solutions are warmed in simmer pots that use candle or electric heat. A few tablespoons of liquid potpourri concentrate are added to water and allowed to heat slowly, releasing fragrances. Cats are often exposed by directly ingesting the liquid potpourri from simmer pots or from spills. They may also rub against leaky bottles or simmer pots or spill the containers on themselves and ingest the material when they groom.

Liquid potpourris may contain essential oils and cationic detergents, both of which are toxic to cats. Because product labels may not list ingredients, it's wise to assume any liquid potpourri contains both ingredients.

## Essential Oils

Essential oils are volatile oils extracted from plants. They are used in perfumes, skin and sunburn analgesics, and vaporizer solutions.<sup>1</sup> Some essential oils are used as herbal remedies for toothaches, headaches, and muscle aches.<sup>1</sup>

The majority of essential oils are well absorbed through mucous membranes and many are well absorbed dermally.<sup>1</sup> Essential oils can cause mucous membrane and gastrointestinal irritation, central nervous system depression, and dermal hypersensitivity and irritation.<sup>1</sup>

## Cationic Detergents

The severe clinical signs of mucosal ulceration seen with liquid potpourri ingestion appear to be due to cationic detergents. These detergents are quaternary ammonium compounds commonly used as fabric softeners, germicides, and sanitizers.<sup>1</sup> Cationic detergents are generally more toxic than anionic or nonionic detergents, which are commonly found in hand soaps and shampoos.<sup>2</sup>

Dermal exposure to cationic detergents can result in erythema, edema, intense pain, and ulceration. Depending on the concentration of cationic detergent, ocular exposure could result in mild irritation to severe corneal injury.<sup>2</sup>

Ingesting cationic detergents can lead to tissue necrosis and inflammation of the mouth, tongue, pharynx, and esophagus. Vomiting, pulmonary edema, hypotension, metabolic acidosis, and central nervous system depression have also been reported.<sup>1</sup> Signs of increased salivation, depression, and dyspnea could easily be confused with a cholinesterase inhibiting agent and may mislead the clinician.

The severity of injury depends on the concentration of the cationic detergent and the duration of contact. The concentration of cationic detergents in liquid potpourri varies with the brand. Concentrations between 1% and 7.5% have been reported to damage mucous membranes, while concentrations greater than 7.5% are considered corrosive to mucous membranes and the underlying tissue.<sup>2</sup> In the experience of the APCC, oral ulcers, stomatitis, and pharyngitis can be seen in cats exposed to concentrations of 2% or less.

Mucosal ulceration could take several hours to appear. Ulcerated mucous membranes appear gray-white or red and inflamed. With time, the tissue may turn black and become wrinkled.<sup>2</sup> Lesions may be limited to the mucosal layer. Animals with mild mucosal damage after ingesting liquid potpourri may appear asymptomatic or may only exhibit hypersalivation and inappetence.

Mucosal damage can extend into deeper tissues with possible perforation. Signs suggestive of mucosal ulceration include lethargy or weakness, persistent vomiting, dysphagia, excessive salivation, severe hyperthermia ( $\geq 104$  F [40 C]), or inappetence. The animal may also vocalize, shiver, or pant in response to pain. Complications can include aspiration pneumonia, esophageal perforation, and secondary bacterial infection.<sup>3</sup>

## **Treatment**

Treating liquid potpourri exposure in cats can be extensive and may involve several days of hospitalization and supportive therapy.

### ***Dermal Exposure***

Immediately after dermal exposure, bathe the cat with a mild liquid hand-dish detergent or a noninsecticidal pet shampoo. Monitor for erythema, swelling, pain, or pruritus, paying particular attention to the footpads and interdigital tissue. Treatment is symptomatic and may include analgesics, anti-inflammatories, and antibiotics.

### ***Ocular Exposure***

For recent ocular exposure to liquid potpourri, irrigate the eye with tepid tap water or physiological saline solution for a minimum of 20 minutes.<sup>4</sup> Afterward, examine the eye for evidence of corneal ulceration. Treat chemical burns with ophthalmic lubricant ointments.<sup>2</sup> For corneal ulcers, apply topical antibiotics (gentamicin sulfate or tobramycin) four to 12 times a day. Conjunctival flaps can act as a blood supply for deep stromal ulcers.<sup>5</sup> Frequent follow-up examinations are necessary because epithelial damage may be delayed for several hours.<sup>2</sup> Consulting a veterinary ophthalmologist is recommended in complicated or severe cases.

### ***Oral Exposure***

Emesis and gastric lavage are contraindicated after the ingestion of caustic agents and should not be performed to avoid re-exposure of the damaged esophageal tissues to the agent.<sup>4</sup> The preferred initial treatment is oral dilution with milk or water by either coaxing the cat to drink the diluent or using an oral syringe. Dilution is most effective if it's performed early.

Activated charcoal is ineffective for caustic agents. Additionally, passing a stomach tube could penetrate damaged esophageal tissue, and charcoal can make visualization of oral and esophageal burns difficult.

For cases of severe stomatitis, pharyngitis, esophagitis, or esophageal ulceration, hydration can be maintained with intravenous fluids. A gastrostomy tube may be necessary for nutritional support.<sup>3</sup>

Sucralfate slurries can be used to treat oral, esophageal, gastric, and duodenal ulcers.<sup>6</sup> Sucralfate promotes healing and mucosal cytoprotection.<sup>3</sup> A dosage of 0.25 to 0.5 g should be given three times a day for three to five days.<sup>6</sup>

To manage the cat's pain, give 0.1 mg/kg of butorphanol tartrate intravenously or 0.4 to 0.8 mg/kg subcutaneously.<sup>6</sup> Butorphanol is an opioid analgesic that provides effective visceral analgesia at low doses for as long as six hours in cats.<sup>7</sup> For more severe pain, consider administering fentanyl citrate as a constant-rate infusion (0.001 to 0.006 mg/kg/hr) or placing a fentanyl transdermal patch.<sup>8</sup> The patch adheres well in cats around the lateral thorax or abdomen. Before applying the patch, clip and clean the area, but avoid using alcohol and shaving the area. Cats

weighing less than 10 kg can receive a 25 µ/hr patch. For cats weighing less than 5 kg, keep one-third to two-thirds of the removable protective liner on a 25 µ/hr patch to reduce the surface area and drug delivery rate.<sup>9</sup>

Although their use is controversial, corticosteroids can be given to reduce the inflammatory response.<sup>10</sup> Prednisone can be administered at a dosage of 1 to 2 mg/kg intravenously once a day for one to two days.<sup>6</sup> Glucocorticoids inhibit fibroblast proliferation and suppress the immune system, so they should be avoided if esophageal or gastrointestinal perforation or bacterial infection is suspected.<sup>6,10</sup>

Monitor the cat for an increase in body temperature or an increase in the total white blood cell count. Broad-spectrum antibiotics are indicated in cases of mucosal damage or secondary infection or as prophylaxis when administering corticosteroids.<sup>10</sup>

Endoscopy can help assess mucosal damage, but it should be used with caution because weakened esophageal tissue could be punctured by the endoscope. In mild cases, the esophageal tissue may appear normal. More advanced cases may reveal hyperemia, edematous and irregular folds, erosions, ulcers, or strictures.<sup>3</sup>

## References

1. POISINDEX® editorial staff: Cationic detergents (Toxicologic Managements). POISINDEX® System, Vol. 100 (B.H. Rumack *et al.*, eds.). MICROMEDEX, Englewood, Colo., expires 12/99.
2. Kore, A.M. *et al.*: Toxicology of household cleaning products and disinfectants. *Vet. Clin. North Am. (Small Anim. Pract.)* 20 (2): 525-537; 1990.
3. Jenkins, C.C. *et al.*: Diseases of the esophagus. *Handbook of Small Animal Practice*, 3rd Ed. (R.V. Morgan, ed.). W.B. Saunders, Philadelphia, Pa., 1997; pp 323-333.
4. Beasley, V.R. *et al.*: Management of toxicoses. *Vet. Clin. North Am. (Small Anim. Pract.)* 20 (2): 307-337; 1990.
5. Kirschner, S.E.: diseases of the cornea and sclera. *Handbook of Small Animal Practice*, 3rd Ed. (R.V. Morgan, ed.). W.B. Saunders, Philadelphia, Pa., 1997; pp 1007-1020.
6. Plumb, D.C.: *Veterinary Drug Handbook*, 3rd Ed. Iowa state University Press, Ames, 1999; pp 306-308, 583.
7. Werner, B.E. *et al.*: Use of analgesics in feline medicine. *Compend. Cont. Ed.* 16 (4): 493-499; 1994.
8. Hellyer, P.W.; Gaynor, J.S.: Acute post-surgical pain in dogs and cats. *Compend. Cont. Ed.* 20 (2): 140-153; 1998.
9. Kyles, A.E.: Transdermal fentanyl. *Compend. Cont. Ed.* 20 (6): 721-726; 1998.
10. Ellenhorn, M.J.; Barceloux, D.G.: Household products: Detergents. *Medical Toxicology: Diagnosis and Treatment of Human Poisoning*. Elsevier, New York, N.Y., 1988; pp 899-901.

"Toxicology Brief" was contributed by Jill A. Richardson, DVM, ASPCA Animal Poison Control Center, 1717 S. Philo Road, Suite 36, Urbana, IL 61802; (888) 4ANI-HELP.

Copyright © 1999, Veterinary Medicine Publishing Group. Reprinted with permission from the December, 1999 issue of *Veterinary Medicine*. All rights reserved. For more on *Veterinary Medicine*, visit [www.vetmedpub.com](http://www.vetmedpub.com).