



PET POISON HELPLINE®



**Roses are Red, Violets are Blue,
Is Your Valentine's Treat a Toxin too?**
Review of Valentine's Day Related Poisonings for Pets

Ashley Smit, DVM
Consulting Veterinarian, Clinical Toxicology
Pet Poison Helpline
February 9th, 2021

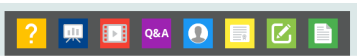


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 800.213.6680
 petpoisonhelpline.com

CE and Widget Information


The green “resource” widget contains downloadable presentation slides, instructions on how to download your CE certificate, a link to take our survey, and links to further information about Pet Poison Helpline.



The yellow “certification” widget is where you will be able to download your CE certificate after you have attended the live presentation for 45 minutes.

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What is Pet Poison Helpline?

- **24/7 animal poison control center**
- **Veterinary & human expertise**
 - 20+ DVMs, 75+ CVTs
 - DABVT, DABT
 - DACVECC
 - DACVIM
 - 10 PharmDs
 - 2 MDs
- **Case fee of \$65 includes:**
 - Unlimited consultation
 - Fax or email of case report
- **Educational Center**
 - Free webinars (archived)
 - Wheel of Vomit
 - Textbook
 - Newsletters for vet professionals
 - Free resources for clinics
 - Videos
 - Electronic material
 - Clings
 - Social media graphics

Email us for more information:
info@petpoisonhelpline.com


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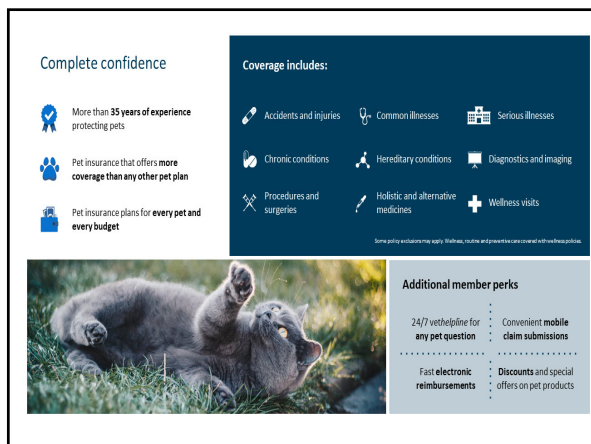
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Pet insurance plan options for coverage

	whole pet [®] with wellness	whole pet [®]	major medical	pet wellness
Accidents, such as poisonings and snake bites	✓	✓	✓	
Injuries, such as ACL, bite wounds, and broken bones	✓	✓	✓	
Illnesses, such as ear infections, vomiting, diabetes and cancer	✓	✓	✓	
Exams, including treatment and prescribed medications	✓	✓	✓	
Hospitalization, including x-rays, blood work, and surgeries	✓	✓	✓	
Hereditary and congenital conditions	✓	✓	Limited	
Wellness exams, including vaccinations, flea control and more	✓			✓
Reimbursement type	90%	90%	Benefit schedule	Benefit schedule



 All plans include a one-time annual deductible

 Annual deductible must be met before reimbursement

 90% reimburses all eligible services on invoice

 Benefit schedule reimburses based on a published list


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Agenda: Valentine Toxins

- Valentine's Flowers
- Valentine's Treats
 - Chocolate
 - What else is in that chocolate?
 - Xylitol
 - Alcohol
- Valentine's Medications
 - NSAIDs
 - Acetaminophen
 - Combination medications




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Most Popular Valentine's Flowers

- Roses
- Carnations
- Tulips
- Lilies
- Alstroemeria
- Common filler flowers in bouquets- baby's breath, daisies



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How to ID flowers?

- Proper identification is very important
- Florist
- Garden Center
- Master Gardener
- University horticulture or botany department
- Smartphone apps/Facebook groups
 - Poisons Help, Emergency Identification for Mushrooms and Plants
- Pet Poison Helpline – live lily ID as part of case



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Lilies

- Renal Toxic Lilies
 - *Lilium* sp- Asiatic, Easter, Stargazer, Tiger Lilies and others
 - *Hemerocallis* sp- Day Lilies
- Non Toxic Lilies
 - *Alstroemeria* – Peruvian Lily
- Other Lilies- CaOx crystals
 - *Zantedeschia* sp- Calla lilies
 - *Spathiphyllum* sp- Peace lilies
 - Many others!



Stargazer Lily/*Lilium* sp.

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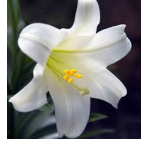
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Renal Toxic Lilies

- *Lilium and Hemerocallis* sp
- Renal toxin in cats, GI upset in dogs
 - No age/breed predilection
- All parts of the plant are toxic
 - Specific toxin not identified, known to be water soluble, rapidly absorbed
- *All exposures* in cats should be taken seriously, including pollen and water from vases of lilies



Day Lily, Hemerocallis sp



Easter Lily, Lilium sp

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Clinical Signs and Progression of Toxicity

- 0-12 hours post ingestion
 - Salivation, vomiting
 - Depression, lethargy
- 12-24 hours post ingestion
 - Azotemia, creatinine disproportionately higher than BUN
 - Polyuria, dehydration
 - Isosthenuria, tubular epithelial casts, NO crystals
- 30-72 hours post ingestion
 - Development of ARF
 - Continued anorexia, vomiting, weakness, anuria, death if untreated



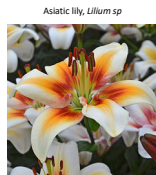
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Treatment of Lily Poisoning

- Emesis if recent
- Bathe if pollen exposure
- Single dose activated charcoal if recent
- Baseline labwork and UA, monitor hydration and renal values q 24 hrs for 48 hrs or until normalized
- IVF for at least 48 hours
- Anti-emetic, GI support as needed



Asiatic lily, Lilium sp

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- No Lilies for Kitties
 - Information available for download at noliliesforkitties.com
 - Fliers, newsletters, PDFs, videos
 - Lists of safer flower alternatives

NO LILIES FOR KITTIES!

Cats and lilies don't mix!

Lily species (True lilies) such as Easter, Tiger, Asiatic, Oriental, etc., and daylilies (Hemerocallis) are highly toxic to cats (not dogs or people). Ingesting petals, leaves, pollen, or even water in the vase can result in kidney failure and death. If your cat eats any part of a lily, call Pet Poison Helpline, your local emergency clinic or your veterinarian immediately. Early treatment is imperative!

SEE BELOW FOR SAFER FLOWER CHOICES FOR CATS

Other lily varieties shown here such as peace (Spathiphyllum), Peruvian (Alstroemeria) and calla (Zantedeschia) are much less dangerous and cause only minor symptoms when eaten.

SAFER* cut flower choices include: Roses, sunflowers, lilies, hydrangeas, carnations, mums, baby's breath, hyacinth and daffodils.

*These flowers may cause vomiting and diarrhea but are not considered life threatening.

www.noliliesforkitties.com

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Peruvian Lilies/*Alstroemeria*

- Considered non-toxic
 - May cause mild GI upset, treatment is supportive
- Comes in many colors

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Other Lilies

- Calla lilies (*Zantedeschia* sp) and Peace lilies (*Spathiphyllum* sp)
- Contain insoluble calcium oxalate crystals
- Can cause oral irritation, drooling, vomiting, pawing at the mouth
- Treatment
 - Rinse mouth, offer ice chips, dilute milk/yogurt to bind crystals
 - Anti-emetics, GI protectants as needed

Calla lilies, *Zantedeschia* sp and Roses, *Rosa* sp

Peace Lily, *Spathiphyllum* sp


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Tulips

- Liliaceae family
- Toxic principle:
 - Tuliposides A and B, found in all plant parts, most concentrated in bulbs
 - Insoluble calcium oxalate crystals in bulbs
- Clinical signs
 - Hypersalivation, vomiting
 - CV signs, foreign body with large bulb ingestion
 - Contact dermatitis from bulbs




Tulipa sp






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Tulips

- Treatment
 - Anti-emetics, GI protectants as needed
 - Emesis, activated charcoal if large bulb ingestion
 - Fluids and CV monitoring if large bulb ingestion










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Roses (*Rosa* sp)

- GI Irritant
- Potential for mechanical irritation from thorns
- Treatment is supportive/symptomatic
 - Anti-emetics, GI protectants, fluids as needed

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GI Irritant flowers

- Carnations (*Danthus* sp)
- Baby's breath (*Gypsophila* sp)
- Daisies (*Bellis perennis*, *Gerbera jamesonii*)
- Treatment is supportive/symptomatic
 - No treatment needed if small ingestion or mild signs
 - Decontamination if large ingestion
 - Anti-emetics, GI protectants, fluids as needed



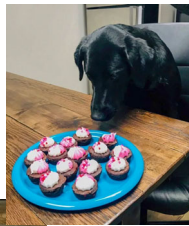
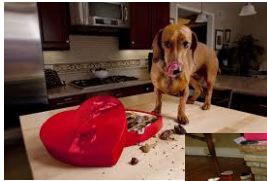
Pink flower- Daisies, *Bellis perennis*
Small white flowers-
Baby's breath, *Gypsophila* sp

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Chocolate



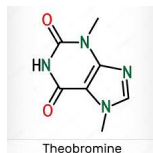
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Chocolate

- Toxic principle: theobromine, a methylxanthine
 - Increases intracellular calcium
 - Inhibits phosphodiesterase, increases cellular cAMP
 - Causes cerebral vasoconstriction, cardiac muscle contractility, CNS stimulation



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Chocolate

- Mild signs 20 mg/kg
 - GI signs, agitation, increased thirst
- Moderate signs 40-50 mg/kg
 - Tachycardia, arrhythmias
- Severe signs 60 mg/kg
 - Tremors, seizures
- Signs seen within 12 hours, may last 24-48 hrs



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Chocolate Questions

- What kind of chocolate?
 - Unsweetened > semi sweet > dark > milk > white
- What brand/product? Weight/amt? Filled or solid chocolate?
- Was it homemade/store bought?
- Who was it intended for? Darker, fancy chocolate for adults? Whimsical, cheaper chocolate for children?



2 layers of chocolate



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Chocolate Treatment

- Induce emesis, up to 6 hours out
- Activated charcoal: multi dose in large ingestions
- IVF
- Anti emetics
- CV, CNS monitoring
- Sedation: acepromazine, butorphanol, diazepam
- Beta blockers if unresponsive to sedation- metoprolol/esmolol preferred
- Methocarbamol
- Anti-convulsants



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What else is in that chocolate?

- Caffeine
- THC
- Psilocybin
- Xylitol
- Raisins
- Macadamia nuts
- Check the ingredient list!



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Caffeine

- Sources: Chocolate covered coffee beans, espresso infused chocolate
- Toxic principle: caffeine, a methylxanthine
 - Antagonizes adenosine receptors
 - Inhibits phosphodiesterase: causes CNS stimulation, myocardial contraction, diuresis, smooth muscle relaxation
 - Stimulates release of catecholamines such as norepinephrine



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Caffeine

- Clinical signs seen within 1-2 hours, last 12-36 hours
- Signs begin at 15 mg/kg
- GI: vomiting
- CV: tachycardia, arrhythmias
- CNS: restlessness, agitation, tremors, seizures
- Hypokalemia



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Caffeine Treatment

- Emesis if early
- Activated charcoal (multi dose if large ingestion)
- IVF
- Electrolyte monitoring, potassium supplementation
- CV, CNS monitoring
- Sedation: acepromazine, butorphanol
- Beta blockers, anti-arrhythmics
- Anti convulsants



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THC

- Tetrahydrocannabinol, psychoactive cannabinoid
 - One of 100 different cannabinoids derived from the *Cannabis* sp. plant
- Schedule 1 narcotic, illegal on a federal level in US
 - Legal for recreational and medicinal use in Canada
- Legal for recreational use in 15 states, medicinal use in 33 states
- Many edible forms, including chocolates



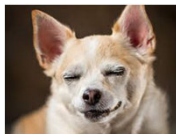
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THC

- No well established toxic dose
 - Minimum lethal dose in dogs 3+ g/kg plant material
 - Clinical signs seen at much lower doses (0.3-0.4 mg/kg PPH data)
 - Potency may vary strain to strain
- Clinical signs seen within 60 mins, may last 18-24 hrs
 - CNS: sedation (more common) or agitation, ataxia, hyperesthesia
 - Vomiting, bradycardia, hyper or hypothermia, urine leaking
 - Severe cases- hypotension, coma, respiratory depression



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THC Treatment

- Decontamination
 - Emesis, activated charcoal if neurologically stable
- IVF
- Anti-emetics
- Monitoring of vitals, thermoregulation
- Sedation if needed
 - diazepam, butorphanol
- Consider intralipids for cases with severe CNS signs (mixed results)



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Psilocybin

- Derived from mushrooms
 - genera *Psilocybe*, *Panaeolus*, *Conocybe*, *Gymnopilus*
- Known as “magic mushrooms” or “shrooms”
- Schedule 1 narcotic, illegal on a federal level in US
 - Schedule 3 drug in Canada
- Many movements on state, local level to decriminalize, legalize for medicinal use
 - Oregon, Denver, Oakland, Santa Cruz, Chicago
 - Resulting in greater availability of products and recipes online



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Psilocybin

- Combined with chocolate (often dark) for palatability
- Both used by ancient civilizations for ritual purposes
- In Nahuatl (Aztec) language
 - Cacahuatl (cacao) = food of the gods
 - Teonanacatl (psilocybe) = flesh of the gods



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Psilocybin

- Toxic principle
 - Metabolized to psilocin, structurally similar to serotonin
 - Rapidly crosses into CNS
 - Stimulates peripheral and central serotonin receptors
- Clinical signs within 2 hours, last 24-48 hrs
 - CNS: ataxia, weakness, vocalization, nystagmus, aggression, coma
 - Tachycardia, tachypnea, mydriasis hyper or hypothermia
 - Liver enzyme elevations, azotemia possible with large ingestions



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Psilocybin Treatment

- Decontamination
 - Emesis if neurologically stable
 - Single dose activated charcoal
- IVF: excreted in the urine
- Monitor CNS status, vitals
- Sedation: acepromazine, butorphanol
- Methocarbamol, anti-convulsants
- Minimize stimuli, dark location, cotton balls in ears



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Xylitol

- A sugar substitute, found in hardwoods or made from corn cob remnants
 - Other sugar alcohols (sorbitol, mannitol, erythritol) only cause GI signs
- Sources:
 - Sugar free candies and chocolates
 - Sugar free baked goods
 - Sugar free gum (popular in children's Valentines!)
 - Some personal lubricants (eg: Astroglide)



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Xylitol Clinical Signs

- Hypoglycemia >0.1 g/kg
 - Within 30 minutes - 8 hours
 - May lead to lethargy, ataxia, seizures
 - Caused by rapid rise in serum insulin levels
 - Not well documented in felines
- Acute hepatic necrosis > 0.5 g/kg, greater risk > 1.0 g/kg
 - Within 12-48 hours
 - Elevations first in ALT, T Bili
 - May lead to liver failure, coagulopathy, icterus
 - Exact MOA unknown



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Xylitol Treatment

- Check blood glucose before emesis
 - Correct hypoglycemia, if present, before induction
- No activated charcoal
- Monitor BG q 2-4 hours
- Monitor electrolytes (watch for hypokalemia)
- Start IVF with dextrose x 24-48 hours if hypoglycemic or if dose >1.0 g/kg



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Xylitol Treatment



- Check baseline liver values and recheck q 12 hrs x 48 hours or until normalized
 - Liver protectants- SAM-e or Denamarin x 2 weeks
 - N-acetylcysteine x 7-17 doses if liver enzymes elevated or dose > 1.0 g/kg
- Monitor coagulation factors if liver values severely elevated
 - Treat with Vitamin K1, fresh frozen plasma transfusion if coagulopathic

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Alcohol



- Sources
 - Beer, wine, liquor containing beverages
 - Filled chocolates, alcohol soaked desserts
- Toxic principle
 - Not well understood, alteration of the balance between inhibitory and excitatory neurotransmitters in the brain, results in depressed brain function

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The Dose makes the Poison

- Toxic dose 1 ml/kg of 95% ethanol
 - Adjust for the concentration of alcohol ingested
 - Proof = twice the alcohol percentage
- Clinical signs within 20-90 minutes
 - CNS: sedation, ataxia
 - HYPOGLYCEMIA
 - Metabolic acidosis, hypothermia, GI upset
 - Respiratory depression/failure in large overdoses



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Alcohol Treatment

- Decontamination
 - Emesis less helpful with liquid products, helpful for chocolate, food products
 - No activated charcoal, does not bind
- IVF: crystalloids, add dextrose PRN
- Anti emetics
- Monitor electrolytes, glucose, acid/base status
- Naloxone for CNS depression, variable efficacy
- Supportive/nursing care: thermoregulation




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If your pet IS your Valentine

Make sure to choose treats or toys with pet safe ingredients



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If Valentine's Day gives you a headache...

- OTC NSAIDs
 - Ibuprofen
 - Naproxen
- Aspirin
- Acetaminophen
- Combination medications
 - Acetaminophen, aspirin, and caffeine




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OTC NSAIDs-Ibuprofen, Naproxen

- GI irritation, ulceration
 - Vomiting
 - Melena, anemia
- Renal toxicity
- CNS signs
 - Sedation, ataxia, seizures at higher doses
- Cat much more sensitive due to limited glucuronidation
- Naproxen: narrow margin of safety, long half life



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Aspirin



- Clinical signs
 - GI irritation, ulceration
 - Tachypnea, hyperthermia
 - Acidosis, liver toxicity, renal toxicity secondary to dehydration
 - CNS signs: seizures, coma at high doses
- Cat more sensitive due to limited glucuronidation
- COX inhibitor, decreased platelet aggregation, uncoupled oxidative phosphorylation

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Treatment



- Emesis if recent
- Anti emetics, GI protectants
- Activated charcoal: multiple doses if renal toxic dose
- IVF for 48-72 hrs if renal toxic dose
- Baseline labwork, recheck renal values q 24 hrs x 48-72 hours or until normalized
- Liver protectants
- Anti-convulsants, intralipids may be considered if CNS signs seen (ibuprofen)

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Acetaminophen

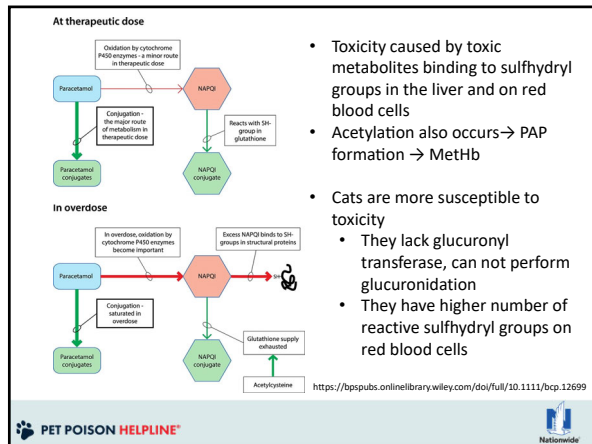


- Tylenol, Paracetamol, APAP
- Dogs
 - KCS in some dogs at 30-40 mg/kg in 72 hours
 - Hepatotoxicity at 100 mg/kg in 2-7 days
 - Methemoglobinemia at 200 mg/kg in 4- 12 hours
 - Rare renal failure
- Cats
 - Toxicity at 40-50 mg/kg
 - Vomiting, facial and paw edema, salivation within 1-6 hours
 - Leading to methemoglobinemia, Heinz body anemia, liver failure, rare renal failure

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Acetaminophen Treatment

- Antidote: N-acetylcysteine (dilute to 5%) 140 mg/kg orally or IV once, followed by 70 mg/kg q 6 hours X 7-8 treatments or up to 17 doses if signs
- Decontamination: emesis, multi dose activated charcoal
- IVF
- Hepatoprotectants: SAM-e, Denamarin
- Vitamin C as anti-oxidant
- Labwork monitoring, liver values and PCV
- Oxygen therapy, transfusions if needed
- +/- Schirmer tear test in 72 hours

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Combination Medications

- Typically marketed for relief of headaches, migraines
- May contain acetaminophen, aspirin, caffeine
- Check the label!

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Any Questions?



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PAWS ON SAFETY: ONE MINUTE PET CLINIC™

10 TOP CAT TOXINS

10 TOP DOG TOXINS

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Blackwell's Five-Minute Veterinary Consult Clinical Companion:
Small Animal Toxicology
2nd Edition

Drs. Lynn Hovda, Ahna Brutlag, Robert Poppenga, Katherine Peterson

- Provides concise, bulleted information focused on the most important facts needed when treating a poisoned cat or dog
- Carefully organized for ease of use in an emergency, with important toxicants arranged alphabetically within categories
- Details clinically relevant information on the most common toxicants encountered by small animals
- Presents a wealth of color photographs to aid in plant identification
- Includes 14 new topics to this edition covering cyclosporine A, sleep aids, tacrolimus, bath salts, synthetic marijuana, poisonous lizards, imidacloprid, spring bulbs, and sodium monofluoroacetate

Paperback | May 2016 | 960 pages | 978-1-119-03654-8 | \$109.99 • CAN \$120.99
www.wiley.com/go/vet

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PPH World:
Australia & New Zealand

Pet Poison Helpline is excited to announce our recent expansion into Australia and New Zealand!

Our services are available 24/7 to any veterinary professional in
Australia by calling **0011-800-4444-0002** and
New Zealand by calling **00-800-444-0002**.

For more information please visit our website:
<https://www.petpoisonhelpline.com/pphworld>

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PPH is Hiring!

Featured Position:
Industry Representative-Now Hiring Certified/Non Certified Vet Techs!

- Daytime shifts
- Monday-Friday between May-September
- Includes 2 weekend shifts/month between October-April
- Positions start March 1st!

Visit our [careers page](#) to learn more including how to apply!

Also hiring:

- Certified/Non Certified Veterinary Technicians for float and evening shifts
- Associate Veterinarian, Industry for mid/evening shift

Questions? Reach out to our HR team at careers@safetycall.com



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2021 Webinars Announced



- **April 6th**
 - Decontamination: So Much More Than Vomiting!
- **March 4th**
 - Ensuring Your Financial Wellbeing as a Veterinary Professional
- **May 13th**
 - The Caring Veterinary Medical Professional: Understanding the Grief Process
- **July 13th**
 - Hot Topic: To Be Announced
- **August 19th**
 - Couple-Care: Relationship First Aid for Veterinary Medical Professionals
- **October 5th**
 - Heavy Metal Toxins: Where They are Lurking May Surprise You
- **November 9th**
 - Seize the Day: Toxin Differentials in the Acutely Neurological Patient

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Thank you for attending!

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[CE credit FAQs](#)

- When will I get my CE certificate?**

Now! You can download it directly from the On24 platform. Please click the yellow certification icon followed by the 'blue-ribbon icon' to open your customized CE certificate in a new screen.
- I attended the webinar but wasn't the person who logged in. Can I still get interactive CE credit?**

Yes. Send your name and email address to info@petpoisonhelpline.com by **1pm central time on Feb. 10th, 2021** (strict deadline; CE certificates will not be granted after the deadline if you were not registered today).
- Can I watch the recorded webinar online for CE credit?**

Yes. You can receive non-interactive CE credit. Go to the "For Vets" page on our website, www.petpoisonhelpline.com for more info.

Comments? Questions? Email us! info@petpoisonhelpline.com