Deltamethrin

Deltamethrin is an alpha-cyano pyrethroid.

**Signs and Symptoms of Poisoning:**
In cases of contact to pyrethroids the first sign of exposure is a specific paresthesia/irritation, often described as "cold burn". This may appear immediately or shortly after contact to the substance, may last up to 24 (rarely to 48) hours, and often is reported to be worsened by warmth (e.g. showering). This "cold burn" is due to a stimulation of free nerve endings, and is dependant on concentration, not on dose. It is strictly a local symptom only and not a symptom of a general poisoning. The irritation can occur both on the skin and on the mucous membranes of the airways. In the latter case in sensible individuals an asthma-like unspecific response can be triggered.

In case of severe intoxications alpha-cyano pyrethroids may cause the following signs and symptoms as seen in animal experiments and suicidal poisoning cases:

<table>
<thead>
<tr>
<th>Organ (system)</th>
<th>Signs/symptoms</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Paresthesia/irritation (&quot;cold burn&quot;)</td>
<td>Local only</td>
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<tr>
<td>Mucous membranes</td>
<td>Irritation, cough, sneezing</td>
<td>Local only</td>
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<tr>
<td>Lung</td>
<td>Chest tightness, airway hyperreaction, &quot;asthma&quot;, lung edema</td>
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<tr>
<td>Heart/circulation</td>
<td>Tachycardia, hypotension, palpitations</td>
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<tr>
<td>Gastrointestinal tract</td>
<td>Nausea, vomiting, diarrhoea, abdominal pain, salivation</td>
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<tr>
<td>Central Nervous System</td>
<td>dizziness, blurred vision, headache, listlessnessless, anorexia, somnolence/coma, seizures/convulsions; tremor, ataxia, choreoathetosis (observed in animals only); muscle fasciculations</td>
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No late effects of pyrethroid poisoning have been described in the scientific literature.

**First Aid:**
- Remove patient from exposure/terminate exposure under self-protection (e.g. long gloves)
- Thorough skin decontamination with copious amounts water and soap/detergent, as pyrethroids are very little soluble in plain water
  Note: Warm water may increase the subjective severity of the irritation/paresthesia, which is not a sign of systemic poisoning..

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- Flushing of the eyes with lukewarm water for 15 minutes, apply soothing eyedrops, if needed anesthizing eyedrops

- Induction of vomiting should only be considered if a significant amount has been swallowed (more than a mouthful), if the ingestion was less than one hour ago, and if the patient is fully conscious. Induced vomiting can remove maximum 50% of the ingested substance. **Note:** Induction of vomiting is forbidden, if a formulation containing organic solvents has been ingested!

**Treatment:**
Gastric lavage should be considered in cases of significant ingestions within the first (2) hour(s). However, the application of activated charcoal and sodium sulphate is advisable in significant ingestions.

There is no specific antidote for pyrethroids, any treatment thus can only be symptomatic.
Reports from the USA seem to indicate a positive effect of vitamin-E-containing oils on the irritation/paresthesia, however, there is no real proof of this. The skin application of oils or lotions containing vitamin E may be considered. The skin irritation may be painful and require the application of analgetics.
Anaesthetic eyedrops may be required in case of eye contamination after flushing.

In cases of severe ingestions cardiac and respiratory function should be monitored.

In case of convulsions diazepam is the anticonvulsant of choice. Thus seizure management should follow standard practice using benzodiazepines (with oxygen and airway protection), if insufficiently effective followed by Phenobarbital infusion as required for status epilepticus.
A suggested regimen would be:
Start with 10 to 30 mg diazepam by intravenous injection according to body weight, for children pro rata. This dose is to be repeated every 10 to 30 minutes according to the patient’s response.

**Contraindications:**
Adrenergic compounds (except for CRP) and high dose atropine.
Pyrethroid poisoning should not be confused with carbamate or organophosphate poisoning.
If salivation is very strong a single dose of atropine may be of help: 0.6-1.2 mg for adults, 0.02 mg/kg body weight for children.

Recovery is spontaneous and without sequelae.