

This book presents accessible and concise information on poisonous plants and fungi to which one can be exposed in the area of the Sakhalin-2 Project. It contains short botanic descriptions accompanied by illustrations, causes and initial symptoms of poisoning, and first aid measures.



Poisonous Plants and Fungi

Sakhalin Energy Investment Company Ltd.



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Poisonous Plants and Fungi is aimed Professionals whose work activities expose them to these plants and The General Public who have an interest in both promoting environmental education and increasing awareness of the natural world by direct exposure to it.

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INTRODUCTION

When we are outdoors, whether we are working or for recreation, we may be constantly interacting with plants without even noticing. Seeing a beautiful flower, we may want to touch it and experience its fragrance. Walking in the forest, we brush against tree trunks and shrubs when going through the thickets, or by carrying leaves and branches to drive insects away. However, it almost never occurs to us that certain plants are toxic and may be extremely harmful.

So what do we know about poisonous plants? From ancient times, connoisseurs of plants were gathering, processing and preserving them. Knowledge of plants, their properties, potency, and potential dangers in use were passed from generation to generation by herbalists. Long ago, the Ancient Greeks developed an extensive understanding of pharmacology and toxicology, and through the practical use of plants (revealing their beneficial, or lethal, effects) brought us information on the specific qualities of individual plant species.

A poisonous plant is a plant that contains chemical substances that are toxic when they enter the human or animal body.

It is here that the poisoning mechanism unfolds: once it enters the human or animal body, a toxic substance

will disrupt the function of certain biochemical processes. While there is great variety amongst toxic plant species, for the purposes of this book we single out **unconditionally poisonous** plants from **conditionally poisonous** plants, those which demonstrate toxicity only in a particular circumstance or when stored improperly.

Despite the many poisonous plants and fungi that exist, cases of poisoning from direct contact or through interaction with their products are extremely rare. Poisoning can be the result of error or lack of caution, either outdoors or in everyday life. Most often it is children who become victims of poisoning, as they might be unaware of poisonous species and the dangers they can present.

Poisoning can occur through inhalation of air that contains a toxic substance, through direct contact of this substance with the skin, or through the ingestion of poisonous specimens of plants and fungi.

The potential danger is heightened by the rapidity of the poisoning process and the speed by which toxic substances are absorbed within a human body. **So, it is best to learn to identify poisonous plant species and to observe cautionary practices when outdoors.**

UNCONDITIONALLY POISONOUS PLANTS

Aconites, or Monkshoods – Aconitum spp. ***Ranunculaceae family***

All of the eleven *Aconitum* species present on Sakhalin Island are highly toxic, many of which are deadly poisonous.

A herbaceous perennial plant, with tall erect or (less frequently) crawling stems. The root system primarily consists of tubers. Leaves have long petioles with palmate or deeply palmately lobes. The stem is crowned by racemes of yellow, blue, or violet flowers; more rarely, white with various shades. The zygomorphic (bilateral) flowers appear on flower-bearing stems with two small bracts. Blooms June-September. The fruit is a follicle with multiple seeds and ripens in August and September.

Aconitum inhabits woodlands, thickets, and meadows, and can be found throughout Sakhalin Island.

Poisoning may result from simple contact with leaves or stems, for instance if one collects them without gloves, as the toxin easily enters the human body through the pores of skin, or passed from hand to mouth by accident.





A fatal dose of poison can affect the gastrointestinal tract and digestive system immediately after ingestion. Symptoms include a sensation of burning, tingling, and numbness in the mouth, burning sensations in the abdominal area, and vomiting. Later on, motor coordination is compromised, tactile sensation fades, the heart rate slows down, and breathing becomes difficult, with death occurring alongside signs of asphyxia.

First Aid includes gastric lavage with 0.2% aqueous solution of tannin to bind the alkaloids; then introduce an aqueous suspension of activated charcoal into the stomach.

Urgently apply for medical aid.



Labrador tea – *Ledum palustre*

***Ericaceae* family**

There are four *Rhododendron* species on Sakhalin Island, with *Rhododendron tomentosum* (also known as ‘Marsh Labrador Tea’ or ‘Wild Rosemary’) being the most widespread among them. It can be found throughout Sakhalin Island, in marshlands, swampy open forests, and light taiga forests.

A shrub reaching 60–125 cm, bearing evergreen foliage and a strong scent. Young shoots are covered with dense coppery-brown hairs. The alternate leaves are linear-oblong in shape with revolute (downward-curling) margins, attached by short petioles. The upper surface of the leaf is dark green and shiny with yellowish glandules, and the underside is covered with rust-colored hairs. Multiple white flowers form together in corymbs at the tips of branches. Blooms in June-July, with fruit – a small ovular capsule – appearing in July-August.

The portions of the plant above-ground contain a poisonous essential oil that has an overwhelming scent and a burning taste. Oil accumulates to its highest levels before flowering. In calm hot weather, this toxic oil can cause headaches, drowsiness, and general fatigue. Since bees may gather nectar from *Rhododendron tomentosum* its honey poses an additional danger.





In cases of honey poisoning, symptoms appear 1 to 1.5 hours after consumption and include dizziness, nausea, heart palpitations, seizures, decreased blood pressure, and choking sensation.

When considering the potential for *Rhododendron tomentosum* poisoning, one must note that its poisonous and volatile essential oil may possibly accumulate on the surface of blueberry fruits, when this shrub grows in the direct vicinity of the *Rhododendron tomentosum* thickets.

First aid begins with gastric lavage using an aqueous suspension of activated carbon. Further treatment is limited to overcoming the poison's suppression of the central nervous and circulatory systems.

Urgently apply for medical aid.



Hogweed – *Heracleum* spp.

***Apiaceae* family**

Two species of *Heracleum* exist on Sakhalin Island, although only adult specimens are poisonous. Of particular danger is the *Heracleum sosnowskyi* (also known as ‘Sosnowsky’s Hogweed’), introduced to Sakhalin Island from the Central and Eastern Caucasus as a forage plant during the 1970s.

A herbaceous perennial plant with a bulky taproot. Its straight stalks reach 1.3–5 meters in height, branching only at the upper portion. Leaves are large and pinnate. Flowers are white, small, and clustered in umbels up to 30 cm in diameter. Plants bloom in June-July, and produce fruit in August-September. The fruit is small and dry.

Heracleum habitat on Sakhalin Island includes thickets of large grasses, river valleys, alongside brooks, and roadsides.

Its leaves, roots, and fruit of *Heracleum* are rich by particular substances – furocoumarins (the main one being bergapten) – that act as photosensitizers: upon contact with skin, they increase its sensitivity to the sun. This substance is found in all species of *Heracleum*. Contact with exposed skin results in real and sometimes severe burns. However, the effect may not be immediate,





and instead may occur within the day or two following contact.

Severe burns are very painful and do not heal for a long time. There have been cases in which careless handling of this plant has disabled its victims.

First aid: after contact with *Heracleum*, wash skin with plenty of water, preferably with a small amount of baking soda. Afterwards, you may spread any emollient for burns over affected areas.

Urgently apply for medical aid.

Northern Water Hemlock – *Cicuta virosa*
Apiaceae family

Northern Water Hemlock grows throughout Sakhalin Island in marshlands, marshy riverbanks, lakes, and backwaters. In Ancient Greece the toxin produced by this plant was used as a state poison.

A perennial herbaceous plant that grows up to 150 cm tall. The stem is hollow, branching at the upper portion. The entire plant is hairless. Leaves appear on long stalks and have strongly dissected plates, with upper leaves bipinnate and lower leaves tripinnate. Petioles are also hollow. Small white flowers cluster in umbels. The umbrella-shaped inflorescences are spherical. Fruits are dry. Blooms in July and August, and fruit ripens in October.

All parts of the plant are poisonous, but the thick, vertical, cylindrical or round rhizome is the most toxic: white during spring, with slightly pronounced transverse bulkheads on the longitudinal section; and hollow in autumn, with well-defined partitions. The rhizome has a pleasant scent of dried apples and a slightly sweet flavour.

Many legends surround the plant, one of which speculates that the Greek philosopher Socrates was poisoned with hemlock brew or juice. Hemlock poisonings are more





frequent in springtime, when there is little greenery. At this time, the plant's green shoots, its familiar scent of spices like parsley and celery, and its visible rhizome make it conspicuous.

The yellow resin secreted by the plant contains cicutoxin – a substance that affects the central nervous system. Within an hour after entering the human body, this toxin can cause nausea, vomiting, abdominal pain, dizziness, cramps and choking. It can be lethal to ingest a piece of rhizome (it does not matter whether raw, baked, or boiled), where the concentration of cicutoxin is highest. Bodily poisoning can occur by absorption of plant sap through broken skin. **The plant is poisonous, even in dry form, and is extremely dangerous even in small (under 5 g) doses!**

First aid starts with gastric lavage. Primary medical assistance should be conducted in accordance with the general rules of acute poisoning treatment, so **urgently apply for medical aid.**

Hokkaido mezereon – *Daphne jezoensis*
Thymelaeaceae family

Grows in southern and central areas of Sakhalin Island (up to the town of Makarov) in conifer forests, open woodlands, and on sites of former conifer forests.

A small shrub, up to 70–80 cm, with two or three boughs of branches and a smooth stem, covered with greyish-yellow bark. The leaves are deciduous, clustered towards tops of branches, lanceolate in shape, broadly rounded at the tip and extended to the base, light green on the upper surface, and gray on the underside. The flowers are small, yellow or pale yellow, in clusters of 2 to 5 on short peduncles. Blooms in May and June, and fruit – a round or ovular red drupe – ripens in August-September.

While *Daphne jezoensis* is toxic for humans, it is a delectable treat for birds and insects. The cause of poisoning is mezerein, a yellow resinous substance. However, the nature of poisoning depends on the manner in which toxic substances have entered the body.

Inhalation of fine particulate matter (dust) from the bark can cause a runny nose, sneezing, and coughing due to irritation of the respiratory tract. Bark dust in the eyes results in conjunctivitis. The fruit present the greatest danger, as they attract our attention with their bright red colour. At its





onset, fruit poisoning provokes very acute gastro-intestinal disorder. The first symptom is a burning sensation in the mouth, followed rapidly by the develop of heart pains, excessive salivation, nausea, vomiting, diarrhoea, dizziness, and seizures. **A strong local irritation leads to the formation of ulcerative lesions in the digestive tract.**

First aid should begin with gastric lavage, followed by administration of an adsorbent (activated carbon) and the enveloping substances (kissel or starchy soups).

Urgently apply for medical aid.

Lily of the Valley –
Convallaria majalis* var. *keiske
Liliaceae family

The Lily of the Valley is famous for its beauty and wonderful fragrance. It is found in the Transbaikalian region and the Russian Far East: Primorsky Territory, Amur Oblast, Sakhalin Island, and the Kuril Islands. This common plant grows in woods and thickets.

A perennial herb of 20–40 cm in height, with a creeping underground rhizome. Above the soil surface in springtime two (rarely, three) leaves appear on long stalks, at the base of which develop broad membranous scales of a purplish-red colour. Leaf blades are oblong, dark-green, glossy on the underside, and dull blue-grey with longitudinal, arcuate, and sharply protruding veins along the upper surface. In late May or early June, an inflorescence of white fragrant flowers, called a raceme, appears. Red berries ripen in August-September.

Despite its beauty, the entire plant (its flowers and berries, especially) is poisonous, as it contains some 38 different glycosides. After contact with the plant you should immediately wash your hands.

In moderate amounts, the substances contained in Lily of the Valley can be of beneficial effect for the heart and rather soothing for the central nervous system.





However, poisoning is possible if its leaves are mistaken for those of wild garlic and consumed, whereas children may be tempted to pick and consume its red berries when they are ripening in August. Lethal cases have been recorded after individuals consumed water into which cut Lilies of the Valley were placed.

In cases of poisoning, functions of the cardiovascular system and the digestive system are disrupted. Heart palpitations, nausea, vomiting, general fatigue, and poor motor coordination can occur.

First aid consists in the application of gastric lavage with an aqueous suspension of activated charcoal. It is important to begin treatment of cardiac disorder immediately, so **urgently apply for medical aid**.



Buttercup – Ranunculus spp.

Ranunculaceae family

There are 32 species of Ranunculaceae in the Far East. All are generally confined to damp habitats, such as moist meadows, the edge of ditches, riverbanks, and lakes.

Ranunculaceae are annual or perennial herbaceous plants with smooth or slightly hairy stems and basal leaves on long stalks. Buttercup leaves are often tri- or quinquepartite. Stem leaves are short-petiolate or sessile (i.e. without petioles). The flowers are yellow, gathered upon flower-bearing stalks at the tips of stems. The buttercup blooms in June and July. The fruit are small dry nuts that ripen in July and August.

The ingestion of excessive infusions or brews can lead to severe poisoning (traditional medicine).

The initial symptoms of internal poisoning are a severe burning sensation in the mouth and excessive salivation. Almost simultaneously, heart pains, nausea, and vomiting are experienced. Signs of disorder in the central nervous system appear soon afterwards.

In cases of internal poisoning, one should perform gastric lavage with an aqueous suspension of activated charcoal and then ingest enveloping substances (kissel or starchy soup). **Urgently apply for medical aid.**



False Hellebore – *Veratrum* spp.
***Colchicaceae* family**

Five species of *Veratrum* are present on Sakhalin Island. False Hellebore (also known as ‘corn lily’) grows in lowland forests and marshy meadows.

This perennial herbaceous plant possesses a single tall (up to 1.8 m in height) straight stem. The underground portion consists of a short thick vertical rhizome. The leaves are elliptical in shape, or oblong-lanceolate (up to 25 cm in length), and vertically pleated with prominent veins and smooth margins. Multiple flowers are white or cream, and clustered in panicles. Blooms in July and August, and the fruit – small capsules – ripen in September.

False Hellebore contains toxic steroidal alkaloids which, when absorbed into the bloodstream after ingestion, can cause sudden cardiac arrest. The rhizome is highly toxic as well, and direct contact paralyzes the central nervous system.

Native Americans once used juice extracted from False Hellebore rhizomes as poison on arrowheads.

The source of poisoning is sometimes the massive hollow stem, which children at play may place into their mouths. There is also potential for poisoning from





honey that contains an admixture of False Hellebore nectar.

The first symptoms of poisoning are a burning sensation of the tongue, tingling in the throat, and sneezing. Thereafter, excessive salivation, abdominal pain, nausea, vomiting, reduced heart rate and blood pressure, and seizures. Direct contact with the plant's alkaloids causes a sensation of warmth or burning on the skin, followed by a sensation of cold and numbness. Later on, there may develop redness or blistering rash. Toxic substances contained in False Hellebore can be absorbed into the bloodstream through the skin.

Same first aid as for Aconitum poisoning: gastric lavage with 0.2% aqueous solution of tannin to bind the alkaloids; introduction of an aqueous suspension of activated charcoal into the stomach.

Urgently apply for medical aid.



POISONOUS FUNGI

Amanitaceae Family

Representatives of the *Amanita* family can be found all over Sakhalin Island in coniferous and deciduous forests. Fruiting bodies appear from July to October.

Fly Agaric – Amanita muscaria

With its bright red or reddish-orange cap with white flakes (volval patches, remnants of the universal veil) atop a long white stipe with a single white ring above the basal bulb (a remnant of the partial veil), *A. muscaria* always looks conspicuous. The underside of the cap bears loose white gills, which are unfixed (not adnate) and free from the stipe. The flesh is white, and the odour is faint and pleasant. **Danger: this fungus has a pleasant taste!**

Fly Agaric poisoning is caused by alkaloids: amanitin, muscimol, muscarine, etc.

Symptoms of poisoning appear within 30–60 minutes after consumption. Gastrointestinal tract functions are disturbed, resulting in nausea, vomiting, diarrhoea, and abdominal pain. This is accompanied by a sense of general excitement. The function of the central nervous system is compromised and dizziness, agitation, delirium, and hallucinations occur.



Panther Cap – Amanita pantherina

This fungus bears a greyish-olive or brownish-yellow cap dotted with white flakes. The underside of the cap displays white gills, which are free and not adnate to the stipe. The white stipe of young fruiting bodies has a striped ring (the remnant of the partial veil), which eventually disappears.

The flesh of *A. pantherina* is white and moist, with a slight odour and no taste. Fruiting bodies appear from July to October.

In cases of poisoning, initial symptoms include fatigue, impaired vision, and subsequent loss of consciousness.



Death Cap – *Amanita phalloides*

The Death Cap has a pale green or white cap with white flakes that soon disappear. The flesh is white, the odour pleasant. **Danger: milky, sweet taste.**

This is one of the most toxic fungi. Poisoning symptoms occur within 7–40 hours after consumption. During this period, toxic substances have enough time for absorption into the bloodstream, which hampers provision of efficient medical care. After a latent period of intoxication, severe abdominal pains appear abruptly alongside uncontrollable vomiting and severe diarrhoea, then dizziness, thirst, and increasing weakness.

First aid includes gastric lavage (regardless of vomiting) and introduction of an aqueous suspension of activated charcoal and laxatives to the stomach. Be sure to consume plenty of liquids to flush toxins from the kidneys.

Urgently apply for medical aid.



Morel – Gyromitra
Helvellaceae family

Gyromitra grows in mixed forests, near stumps or on fallen decaying trunks. The fruiting bodies appear in mid-summer and have an unusual, lumpy cap of ochre-brown, 4–10 cm wide, which is nearly the same length as the thick and grooved stipe.

The cause of poisoning is generally its accidental consumption as food, mistaken for very similar morels. The fruiting body contains helvolic acid, which destroys red blood cells. It also contains a toxin similar to that found in the Death Cap, which is not eliminated with thermal treatment.

Symptoms of poisoning occur within 6–10 hours after consumption. A sensation of pressure in the heart develops, followed by sharp pain in the upper abdomen, vomiting, and weakness. In cases of mild poisoning, vomiting ceases within 2–3 days, while severe poisonings entail stronger symptoms of headache, dizziness, and loss of consciousness.

First aid includes gastric lavage with an addition of activated carbon, and the use of laxatives and enemas.

Urgently apply for medical aid.



CONDITIONALLY POISONOUS PLANTS

Marsh Calla – Calla palustris

Araceae family

The Marsh Calla (also known as ‘Bog Arum’) can be found all over Sakhalin Island, and grows alongside bodies of water, in marshes and wet meadows.

A perennial herbaceous plant with thick creeping green rhizome, the nodes of which produce long roots. Leaves are on long petioles, 8–24 cm long. Leafblades are large, heart-shaped from the base to pointed tip, smooth, and shiny. The flower-bearing axis is leafless, with a spadix or “cob” inflorescence at the top. A large white or white-green bract, or spathe, is formed at the base of the inflorescence. Calla blooms in May and June, and its bright red berry-like fruit ripen in September.

The plant is extremely poisonous while flowering, especially the case for its rhizomes and berries due to the high oxalic acid content. Lethal poisoning cases are not known, but the effects of ingestion are quite grievous.

In cases of poisoning, symptoms include salivation, weak and rapid pulse, and lesions of the gastrointestinal tract associated with a sharp inhibition of contractile activity (motility) of the intestine.





Compulsory first aid includes gastric lavage, which may be quite successful.

The introduction of oxalic acid depresses the contractile function of the gastrointestinal tract, and so one can remove a significant portion of the toxins before there is enough time for their effects to fully develop.

It is known that, in the past, people consumed Marsh Calla rhizomes in dried form — soaked, pounded, and boiled — as they are rich in starch.

Urgently apply for medical aid.

Paris Herb – *Paris spp.*

***Trilliaceae* family**

Grows primarily in the Far East — in mixed and deciduous forests, clearings, and amongst shrubbery.

A perennial herbaceous plant up to 30 cm tall displaying erect stems with 4–8 leaves at the top, clustered in a whorl. The leaves are oblong and up to 3 cm in width. The root is a long creeping rhizome. Atop the stem is a single flower, which consists of four narrow green lanceolate petals, long greenish-yellow stamens, and a large dark purple, almost black, pistil. Blooms in June and July, and bluish-black berries ripen in August and September.

The fruit of this plant contain cardiac glycosides, which suppress the central nervous system and cause severe irritation of the mucous membranes of the stomach and intestines. In cases of fruit poisoning do symptoms of cardiac abnormality appear and severe abdominal pain accompanied by vomiting and diarrhoea.

First aid includes gastric lavage with an aqueous suspension of activated charcoal, and ingested preparations of enveloping substance (starchy soups). At the same time one must stabilize heart activity. **Even under slightest suspicion of poisoning, urgently apply for medical aid.**





Red Baneberry – *Actaea erythrocarpa*

***Ranunculaceae* family**

Found throughout Siberia and the Far East. Grows singly or in small groups in coniferous and mixed forests, usually on the fringes.

A perennial herbaceous plant with one or more stems up to 70 cm in height. The leaves are large, complex, and bi- and triternate. Small white flowers are clustered in an ovular raceme at the top of the stem. Blooms in June, and red and juicy berry-like fruit ripens in August and September.

The plant has not been sufficiently studied, and we know only that its rhizome, roots, and leaves contain alkaloids. Leaves and stems contain saponins, while fruit and seeds contain substances with a strong local irritant effect. In cases of direct contact, skin develops blisters. Animals are found to develop vomiting and respiratory distress upon ingestion of different parts of the plant.

First aid includes gastric lavage with an aquatic suspension of activated charcoal. In order to proceed immediately to treatment for any cardiac disorder, **urgently apply for medical aid.**



Honeysuckle – *Lonicera* spp.

***Caprifoliaceae* family**

Twelve honeysuckle species inhabit the Far East, many of which are common and widespread, such as the edible Blue-berried Honeysuckle. Yet a few species are poisonous. The general rule is that one can consume berries that are blue or nearly black in colour, while red and orange berries are poisonous and should be avoided.

Chamisso's honeysuckle – Lonicera chamissoi

Endemic to the Far East, *L. chamissoi* is found on the Kamchatka Peninsula, Sakhalin Island, the Kuril Islands, the lower Amur Basin region, and in the north of Primorsky Territory. Grows on forest edges, in undergrowth of needleleaf forests, and on open slopes.

A low shrub. Leaves are small, elliptical or slightly elongated simple ovals, in opposite arrangement and attached to the stem by short petioles. The flowers are dark purple, produced in pairs on long stalks from the axils of upper leaves. Fruits are nearly spherical bright-red double stems (very similar to berries) formed of two ovaries fused at the top. Blooms from late June





to mid-August. The fruits ripen between mid-July and early September. Plants are highly ornamental in bloom, and while bearing ripe fruit.

Child poisoning by honeysuckle fruit is very possible because of their attractive appearance.

The fruit is irritating to the stomach. Additional symptoms of poisoning may include nausea, vomiting, and pains in the heart. Often, the poisoning victim develops diarrhoea.

First aid requires gastric lavage with an aqueous suspension of activated charcoal. Bear in mind stomach irritation, and try to ingest enveloping agents (e.g. starchy products).

Urgently apply for medical aid because of the risk of cardiac effects.



***Okhotsk clematis* –
Clematis sibirica var. *ochotensis*
Ranunculaceae family**

Found in Eastern Siberia and the Far East: in Primorsky Territory, the Amur River basin, the Kamchatka Peninsula, and the Kuril Islands. Grows singly, or sometimes in small groups, in coniferous and mixed forests, at forest margins, and on rocky slopes.

A shrub with long, prostrate, and climbing shoots. Biternate opposite leaves are attached to the stem with long petioles. Flowers are large, purple or violet, and develop on long flower-bearing stalks from the axils of leaves. Blooms in June and July.

The potential for poisoning is low. The plant contains a glycoside responsible for its toxicity, evident in skin irritation and a burning taste.

First aid is the same as for other plants in the Ranunculaceae family, and one should **urgently apply for medical aid**.



Marsh Marigold – *Caltha* spp.

***Ranunculaceae* family**

There are three species of marigold on Sakhalin Island. These grow along the banks of rivers, streams and ponds, and in marshlands.

A perennial herbaceous plant with straight or deflected stems reaching 50 cm (less often, up to 80 cm) in height. All parts of the plant in a fresh state are very green and lush. Basal leaves are on long petioles, while stem leaves are almost sessile, on very short petioles. Leaf blades are large and kidney-shaped. Yellow flowers are clustered in small florets. Blooms in May and June, and fruits – follicles, dehiscent at maturity – ripen in July and August.

The Marsh Marigold, like other *Ranunculaceae*, is poisonous. Those parts of the plant above-ground contain anemonin, choline, and other substances that act as a depressant on the central nervous system, being close to the neurotic effect. Ingestion of succulent parts of the plant can induce nausea, vomiting, and abdominal pain, while external contact irritates skin and mucous membranes. In contrast to other plants of the *Ranunculaceae* family, the Marsh Marigold can maintain toxicity even in a dried state.





Note that stems and leaves of the Marsh Marigold can be safely consumed only after boiling and marinating, after which they lose their toxicity.

First aid is the same as for other plants from the Ranunculaceae family: gastric lavage with an aqueous suspension of activated charcoal. Irritation to the stomach can be alleviated with ingestion of enveloping agents (starchy products).

Urgently apply for medical aid.

**Manchurian wild ginger –
Asarum heterotropoides
Aristolochiaceae family**

Found on Sakhalin Island and the Kurile Islands. Grows in coniferous and mixed forests.

A perennial herbaceous plant with no stems. The root structure is a branched rhizome. In the spring, two leaves of a cordate-reniform shape and 5–8 cm long appear on long stalks above the soil surface. Flowers dark purple 12–15 mm long, flowering in May to June. Pedicels gradually stretch and flowers rest on the ground. The fruit – drooping hemispherical capsules – ripen in mid- to late summer.

Rhizomes contain essential oils, glycosides, and alkaloid traces.

The plant is classified as toxic, as ingestion causes acute inflammation of the gastrointestinal tract. Chewing the rhizome results in a sensation of numbness in the mucous membranes of the mouth and tongue.

Care should be taken when in contact with this plant; do not chew the leaf petioles and be sure to wash your hands after direct contact.



Solomon's seal –
Polygonatum maximowiczii
***Asparagaceae* family**

Eight species of *Polygonatum* (also known as ‘Solomon’s Seal’) are present in the Far East, and two species inhabit Sakhalin Island: *Polygonatum humile* and *Polygonatum maximowiczii*.

Both grow in deciduous forests, amongst shrubs, and in meadows.

A perennial herbaceous plant, 60–100 cm tall. The root structure is a rhizome. The stem is glabrous (hairless) and unbranched, with large oblong leaves up to 20 cm long. Flowers are greenish-white, one or two produced on petioles emerging from leaf axils. Blooms in June and July. Fruit – spherical, dark blue berries – ripens in August and September.

Its – frustratingly tempting –berries cause vomiting. The plant contains glycosides, which act similar to those glycosides found in Lily of the Valley.

First aid in cases of berry poisoning requires gastric lavage with an aqueous suspension of activated carbon.

Urgently apply for medical aid, as glycosides can interfere with heart function.



Thermopsis – Thermopsis lupinoides

Fabaceae family

Found only in the Far East. It grows along the coast and on roadsides, usually in sandy soils.

A perennial herbaceous plant up to 0.5 m in height, with deep-reaching root systems. Leaves are ternate, up to 7 cm long, and broad with hairy undersides. Large yellow blossoms are zygomorphic, up to 2 cm long, and clustered in the upper part of the plant in sparse racemes. Blooms from June to August. The fruits are poisonous and very similar to peas, ripen in August and September.

The fruit presents a danger for poisoning. All parts of the plant aboveground contain alkaloids. The root system accumulates saponins, which induce an expectorant reaction. In case of overdose, the expectorant effects of this plant can develop into an emetic action. Further, typical symptoms of poisoning include a general stimulation alongside increased salivation and shortness of breath. Cramps alternating with depression are also possible. In circumstances of more severe poisoning, respiratory depression can progress to fatal levels.

First aid starts with gastric lavage with an activated charcoal suspension in 2% solution of baking soda.

Urgently apply for medical aid.



Japanese Yew – *Taxus cuspidata*

***Taxaceae* family**

Grows in southern, central, and northern-west areas of Sakhalin Island, in coniferous and mixed forests.

Present as trees, up to 20 m in height, and as shrubs towards the north of Sakhalin Island. The bark is reddish-brown. Needles are a glossy dark green on the upper surface, and lighter on the underside. Male cones form as sessile spikes in the axils of needles. Female cones are composed of one seed around which develops a fleshy reddish-orange aril, a juicy berry-like structure with sweet taste.

All parts of the plant, except red “fruit”, contain a poisonous alkaloid – taxine. Mistakenly often taken for Christmas decorations – common problem!

Mild poisoning symptoms include a slight increase in temperature and an excited state. Severe poisoning is accompanied by heart dysfunction (low blood pressure), excessive salivation, vomiting, and respiratory depression.

First aid includes gastric lavage with activated charcoal suspension and ingestion of enveloping substances (kissel or starchy products).

Urgently apply for medical aid.



It is far easier to protect oneself from poisonous plants and fungi than to treat cases of poisoning.

Remember and observe just a few important rules:

- do not collect unfamiliar plants and mushrooms;
- do not taste them, or rub them in your hands ;
- do not use them as food;
- do thoroughly wash your hands after contact with them, particularly if clearing wild areas as part of gardening activities.

In cases of direct contact with a poisonous plant, immediately wash the affected skin area.

ESSENTIAL FIRST AID RULES IN CASES OF POISONING

In cases of any poisoning the victim's condition depends on how quickly he or she can obtain initial medical aid. One should remember that arranging medical first aid on site is an advantageous preventative measure in terms of time, since most poisonings occur when toxic substances enter into the digestive system. Some toxins will have already been absorbed into the bloodstream by the time initial symptoms of

poisoning appear, a development indicated by these very signs.

First aid consists of two steps, which ideally should be carried out simultaneously: 1) prevent any further absorption of the poisonous substances; 2) fight against effects of poisonous substances that have already been absorbed.

The first step includes the removal of toxic products from the stomach and intestines. It is only after their complete removal from the body that the process of absorption of toxic substances into the bloodstream will stop.

Keep in mind that these measures may not bring an immediate improvement to the affected person's condition. However, and most importantly, they prevent any further aggravation of poisoning. In cases of poisoning by plant substances that cause strong irritation of mucous membranes in the digestive tract, improvements in the injured person's condition can occur immediately after the removal of toxins from the human body.

Lavage is the primary way to remove toxins from the stomach. It is necessary to carry out this procedure immediately on site, but one should always observe the following conditions: 1) that consciousness of the poisoning victim is preserved; and 2) a sufficient

amount of water (preferably warm) is provided. Often, activated charcoal is added to the water, in a solution of 20–30 g per litre.

If poisoning is accompanied by symptoms of sharp discomfort in the gastrointestinal tract, after gastric lavage one should consume enveloping substances: these include starchy soups, jellies, kissel, and other starchy liquid foods. The presence of vomiting should not deter those engaged in offering such first aid to the injured person.

After toxins have been removed from the stomach, care should be taken to ensure that they quickly exit the intestinal tract. Therefore, it is necessary to introduce a rapidly-acting laxative, preferably saline laxatives which operate throughout the intestines and prevent absorption of intestinal contents into the blood. Remember that laxatives are contraindicated for cases in which poisoning is accompanied by acute inflammation of the digestive tract.

It is important to carry out an accurate diagnosis, so try to preserve the remnants of the poisonous plants removed from the stomach or intestines. This can greatly facilitate subsequent medical care for the injured person.

The second step is about obtaining professional medical assistance. If such medical attention is delayed, the in-

jured person should be given plenty of fluids to drink in order to continue to eliminate toxins from the body.

The most important rule for any poisoning – involving either poisonous plants or fungi (or even the suspicion of poisoning) – is to **urgently apply for medical aid**.

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