Information for the public on potassium iodide 65 SERB tablets (KI tablets)

Questions and answers about the potassium iodide 65 SERB tablets (KI tablets)

Here you will find information about the **distribution**, **storage** and **effect** of iodine tablets as well as on the **correct behavior** in the event of a severe nuclear power plant accident.

All questions and answers can also be found on the Internet at
www.jodtabletten.ch

Schweizerische Eidgenossenschaft
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A precautionary measure
of the Swiss Confederation
for the protection of the population

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Distribution

Which iodine tablets are being distributed?

The last distribution directly to households, workplaces and institutions within 50 km of a Swiss nuclear power plant (NPP) took place in 2014. During this campaign, potassium iodide 65 AApot tablets (authorisation holder until the end of 2022: Armed Forces Pharmacy) were distributed in a pack with a purple stripe. Depending on the batch, the shelf life of these tablets will expire between the end of 2023 and September 2024, which is why the Armed Forces Pharmacy has runned a new distribution campaign 2023/2024. This time, packs with an orange stripe were distributed. They are manufactured by the company SERB (potassium iodide 65 SERB tablets (authorisation holder since 2023: DRAC AG)). Potassium iodide 65 AApot tablets in packs with a blue stripe have been stored by cantons completely or partly outside of a 50 km radius from an active NPP since 2020. These tablets can be used until the end of 2029 and will be replaced in good time. Since autumn 2023, potassium iodide 65 SERB tablets with an orange band have also been stored in the cantonal warehouses around the former Mühleberg nuclear power plant.

Potassium iodide SERB tablets and potassium iodide AApot tablets are equivalent.

What does a box of iodine tablets (potassium iodide 65 SERB) contain?

Each box of potassium iodide 65 SERB contains 2 blisters of 6 tablets each and a package leaflet in three languages. Each tablet contains 65 mg of potassium iodide. The blisters are opaque and covered with an additional white protective film to prevent accidental ingestion by children. The potassium iodide 65 SERB tablets that will be distributed to the population during the autumn 2023 campaign are additionally inside a white shipping box. In addition to the package leaflet in every box of potassium iodide 65 SERB tablets, the shipping box also contains brief information (an information leaflet) in eight languages: German, French, Italian, English, Serbian, Albanian, Spanish and Portuguese. The expiry date of the tablets is only printed on the potassium iodide 65 SERB box.

What are the iodine tablets used for?

Potassium iodide 65 SERB and potassium iodide 65 AApot tablets are high-dose iodine tablets that are used only in an emergency and when directed by the authorities. If a serious incident occurs at a nuclear power plant, radioactive iodine is one of the substances that may be released into the environment. This enters the human body in inhaled air and accumulates in the thyroid gland. Iodine tablets prevent radioactive iodine from being absorbed by the thyroid gland. The tablets must be taken at the correct time.

However, iodine tablets taken at the correct time only protect the thyroid against absorption of radioactive iodine. They do not protect the body against the harmful effects of other radioactive substances. The authorities therefore always issue additional instructions, such as to remain inside the house, when directing the population to take iodine tablets.

To whom and when are iodine tablets distributed?

Iodine tablets are distributed every ten years to Swiss households and workplaces (including schools, kindergartens and childcare facilities) located within 50 km of a Swiss nuclear power plant. Iodine tablets were last distributed directly within this 50 km radius in 2023/2024.

In regions outside this area, the cantons store enough iodine tablets to supply the population should an incident occur. Iodine tablets were last distributed to the cantons at the end of 2020. This is a precautionary measure in case a serious incident should occur at a NPP in Switzerland or a neighbouring country.

As the Mühleberg nuclear power plant (KKM) was taken off the grid in 2019, iodine tablets were no longer distributed directly to the population, businesses and public institutions in numerous municipalities in the affected regions of the cantons of Bern, Fribourg, Neuchâtel and Vaud during the last distribution in fall 2023. Instead, these cantons are ensuring suitable decentralized storage of iodine tablets in sufficient quantities to supply the entire population in the event of an incident.

Are iodine tablets only distributed in Switzerland?

Every country is responsible for providing its population with iodine tablets. International bodies recommend countries to develop a strategy for distributing iodine tablets. Iodine tablets are distributed in Switzerland as a precautionary measure in case a serious incident should occur at a Swiss nuclear power plant.

When will new iodine tablets be distributed?

The last distribution campaign within the 50 km radius took place in 2014. Since the shelf life of the tablets distributed then will expire between the end of 2023 and September 2024, depending on the batch, the Armed Forces Pharmacy has launched from 16th october 2023 to 19th november 2023 a new distribution campaign to the population within 50 km of the nuclear power plants in Gösgen, Beznau and Leibstadt. In the first quarter of 2024, deliveries were made to businesses and public institutions.

Distribution area foriodine tablets

- The distribution area
- Omission
- Nuclear power plant in operation
- Nuclear power plant out of operation

Who is responsible for supplying the population with iodine tablets?

The Federal Office of Public Health (FOPH) has overall responsibility. It is working with the authorisation holder DRAC to provide the necessary medical and scientific information (in accordance with Art. 9 of the Iodine Tablets Ordinance).

The iodine tablets will be distributed by the federal government directly to households, workplaces and public facilities within 50 km of the Swiss nuclear power plants.

In the Iodine Tablets Ordinance procurement, distribution and quality monitoring of the tablets are delegated to the Armed Forces Pharmacy as the centre of excellence.

The Armed Forces Pharmacy works with the permanent "Swiss Iodine Tablets Office". The Office is currently domiciled with ATAG Wirtschaftsorganisationen AG in Bern.

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Swiss Iodine Tablets Office

Storage

I have received a pack of iodine tablets (potassium iodide 65 SERB). What should I do with it?

The tablets are intended for use in the event of an incident at a nuclear power plant. As long as no incidents occur, the packs and any information contained in them must be kept in a dry place at room temperature and out of the reach of children. Should an event occur, the authorities will specifically request the population to ready the tablets and take them if necessary.

How should the iodine tablets be stored?

The iodine tablets must be kept in the closed original pack at room temperature (15 – 25°C). Please store the tablets out of the reach of children.

How long are the iodine tablets (potassium iodide 65 SERB) usable?

The expiry date is printed on the packaging containing the tablets (e.g. EXP: 12.2024). The tablets must be kept until the authorities request you to return them. This also applies to tablets that may have reached their expiry date. The quality of the high-dose iodine tablets is controlled on an ongoing basis by the Armed Forces Pharmacy.

I'm moving house. Do I need to give back the pack I have already received?

No. All recipients may keep their pack if they move out of the municipality that issued it. This is recommended particularly if you are moving within the distribution area (a 50 km radius around the Swiss nuclear power plants). If you are moving outside the distribution area, the iodine tablets can also be returned to a pharmacy or drugstore, where they will be disposed of correctly.

I have lost my iodine tablets. Where can I get a new pack and how much will it cost me?

Potassium iodide 65 SERB tablets can be obtained from a pharmacy or drugstore within 50 km of a Swiss NPP and on presentation of a voucher. Please take care of the tablets you have received and do not lose them. In case of loss please contact the Swiss Iodine Tablets Office: office@jdmt.ch

Mode of action

GENERAL

Why is radioactive iodine harmful for the thyroid gland?

After an incident at a nuclear power plant, radioactive iodine (I-131) may be released into the atmosphere and subsequently inhaled, or absorbed into the body from the food chain. It is stored in the thyroid gland, exposes it to radiation from the inside and in this way can damage it. This can lead to thyroid cancer. Children and adolescents are at higher risk of developing thyroid cancer as a result of exposure to radioactive iodine.

How do the tablets work and do they really help?

The thyroid gland needs the element iodine to function normally. A large amount of iodine is contained in the high-dose iodine tablets distributed by the federal government. When these tablets are taken, the thyroid gland is saturated with normal iodine. As a result, for a certain length of time it is unable to absorb iodine; if an incident occurs at a nuclear power plant, it is also unable to absorb radioactive iodine. Inhaled radioactive iodine is therefore excreted from the body rapidly. This eliminates the risk of radioactive iodine accumulating in the thyroid gland. Radioactive iodine in the thyroid gland can lead to thyroid cancer in the longer term as a result of exposure to radiation.

Do the tablets have side effects?

Side effects are rare and generally harmless. Possible side effects are described in the package leaflet, or you can ask your doctor or pharmacy.

I have problems with my thyroid gland. Could I take the tablets in an emergency?

Anyone with thyroid gland problems should ask their doctor what they should do in the event of an incident the next time they have an appointment.

What happens if I take the tablets accidentally without an incident having occurred? Should I see a doctor immediately? Will it affect my health?

If you take the high-dose iodine tablets without a reason, the likelihood of side effects happening is low and short-lived despite the high dosage of active substance that they contain. If you experience severe or persistent side effects, talk to you doctor to be on the safe side. If the tablets have been taken accidentally by an infant, or if you are pregnant or breastfeeding, or if you are being treated for a thyroid disorder, you should consult the doctor treating you. You should also talk to your doctor if you are one of the people for whom the iodine tablets are not suitable (see the section in the package leaflet headed "When should potassium iodide 65 SERB not be taken?").

Can I also take the iodine tablets preventively to get better protection against radiation?

The iodine tablets are only suitable for use if there is an elevated concentration of radioactive iodine, as may be the case if an incident occurs at a nuclear power plant. You are urgently advised against taking the tablets without being instructed to do so by the authorities because long-term use on a prophylactic basis affects the functioning of the thyroid gland.

Is potassium iodide 65 SERB suitable for treating iodine deficiency?

No. The dosage in potassium iodide 65 SERB tablets is too high for this purpose. There are specific options for preventing iodine deficiency, e.g. iodised salt. Please obtain advice from your doctor or in a pharmacy or drugstore.

Do iodine tablets also provide protection against other radioactive substances such as caesium or strontium?

No, iodine tablets are of no use against substances such as caesium or strontium. These substances may also be released if an incident occurs at a nuclear power plant. They are absorbed by the body mainly from food. The authorities will direct the population to take appropriate protective measures.

Iodine tablets protect the thyroid gland. How can I protect the rest of my body against radioactivity?

If an incident occurs at a NPP, the National Emergency Operations Centre NEOC operated by the Federal Office for Civil Protection will provide information through the media and through Alertswiss about what measures the population needs to take. Other protective measures may include evacuation from an area (if time permits) or remaining at home or in the basement.

ADULTS

I'm over 45 and I've heard that I shouldn't take the tablets at my age. What should I do now?

Promptly taking iodine tablets to prevent thyroid cancer is an effective measure for children, adolescents, pregnant women and people under 45 if an incident occurs at a nuclear power plant. The risk of developing thyroid cancer decreases sharply with increasing age. This means that the possible side effects of iodine tablets become a greater issue.

The Federal Commission for Radiological Protection (CRP) now recommends placing an age limit of 45 years on the use of iodine tablets, as is the case in neighbouring countries. Pregnant or breastfeeding women are not subject to this age limit and, should the need arise, should also take iodine tablets if they are over 45. Further information can be found in the CRP recommendation of 20 September 2022 (PDF, 495 kB, 05.12.2022) [Not available in English].

I'm pregnant. Can I take iodine tablets?

If an incident occurs, pregnant women should take iodine tablets to protect their unborn child. The dosage is shown in the package leaflet.

CHILDREN

How effective is it for children to take iodine tablets if an incident occurs?

The younger a person is, the more sensitive their thyroid gland is to radioactive iodine and the greater the risk is of thyroid cancer developing at a later date. This means that it is above all toddlers and children who need to be protected from exposure to radiation. Experts estimate that their risk of developing cancer if they are exposed without protection is around 10 times higher than that of young adults.

Newborns up to 1 month	¼ tablet, just once
Children 2 months to 3 years old	½ tablet per day*
Children 4 to 12 years old	1 tablet per day*
Children over 12 and adults	Take 2 tablets at once per day*
Pregnant and breastfeeding women	Take 2 tablets at once per day over a period of up to 2 days

* The duration of administration is guided by how long the exposure situation lasts. It is determined and communicated by the authorities.

My child finds it difficult to swallow tablets. Can I administer them any other way?

The iodine tablets can be dissolved in water or fruit juice, or crushed and mixed with yoghurt. The drink or food containing the tablet must be consumed immediately.

My child has swallowed a tablet by accident. What should I do?

Give the child a lot of liquid to drink. It is not usually necessary to consult a doctor. If the child has swallowed several tablets or is clearly experiencing side effects, it is advisable to contact your GP or paediatrician.

This situation should not really arise. The tablet blisters are opaque and additionally covered with a child-resistant white protective film that makes it more difficult to press the tablets out of the blister.

Should mother and child take iodine tablets while the child is being breastfed?

Although the newborn baby receives a little additional, non-radioactive iodine in the breast milk, iodine prophylaxis is recommended for both mother and child. Please note that the dosage is different for children and adults and can be found in the package leaflet.

ANIMALS

Can I protect my pets with the potassium iodide tablets that have been distributed?

Pets and livestock such as dogs, cats and cows are mammals, which means that their thyroid glands work in the same way as human ones. However, since the dosage for animals is much lower (depending on the species it is between 10 and 1000 times lower than for humans) it is not advisable to administer iodine tablets to animals. Only cows would tolerate them well; these tablets would represent a massive overdose for all other animals. If you are interested in further information, please talk to your veterinarian the next time you see them and show them this leaflet, which contains additional information about use in animals.

What dosage is recommended for individual pets and livestock with a normal iodine intake? (Information for veterinarians)

Dosages for pets and livestock are usually considerably lower than for humans. The following dosage guidelines should be observed:

- Dogs: 0.033 mg/kg (milligrams per kg bodyweight)
- Cats (fully grown): 0.1 µg/kg (micrograms per kg bodyweight)
- Kittens: 0.3 µg/kg (micrograms per kg bodyweight)
- Poultry: 0.35 mg/kg (milligrams per kg bodyweight)
- Cows: The European legislation permits up to 165 mg/cow/day for a milk yield of 15 kg/day. 50 ppm in feed is also recommended. Another source recommends 24 mg/day during the last phase of gravidity and 48 mg/day at the start of lactation.

Limit values:

- Calves: Doses up to 80-100 ppm are tolerated with no problems; reduced weight gain is observed above this level.
- Dairy cows: 400 mg/day were administered with no adverse drug reactions (ADR)
- Sheep: up to 150 mg/day with no ADR (higher doses led to reduced weight gain)
- Pigs: enlarged thyroid glands and a reduced iron concentration in the liver were observed at 400 ppm (other studies report up to 2500 ppm without ADR)
- Horses: a 3% incidence of goitre was observed in the foals of dams given 48-55 mg iodine (10% with 56-69 mg and 50% with 288-432 mg)
- Up to 59 mg/kg was tolerated with no problems by dogs weighing 15 kg (vomiting was observed in some cases).

Incidents

IN GENERAL

What does “incident” actually mean?

An incident is an accident at a nuclear power plant which results in radioactive substances, including radioactive iodine, being released into the environment. The main objective of so-called emergency preparedness in this context is to prevent radiation-related diseases in the affected population.

The authorities and the operators of nuclear power plants work closely together to ensure that action can be taken rapidly should an incident occur.

Does a general emergency plan exist? Who orders measures to be taken if an incident occurs? Where can I get more information?

The National Emergency Operations Centre (NEOC) works closely with the cantons and the federal offices to prepare measures designed to protect the population should increased levels of radioactivity occur. An emergency plan has been developed for incidents at nuclear power plants; this regulates the responsibilities and tasks of the federal government and the cantons with respect to both preparations and the incident itself. It also states how the population should be alerted and the protective measures that are necessary in the event of such an incident.

You can find further information at www.naz.ch

WHAT TO DO IF AN INCIDENT OCCURS

How do I learn that an incident has occurred? What should I do?

If an incident occurs, the authorities alert the affected population by means of sirens sounding the general alarm signal. This alarm means that you must listen to the radio, follow the instructions issued by the authorities and inform your neighbours. The authorities use radio (and other media) to inform the population and issue instructions about what people should do.

It is not necessary to take iodine tablets immediately. Radioactivity is measured over a very wide area and the authorities only instruct the population to take iodine tablets in municipalities that are likely to be affected by radioactivity.

You can find further information about alarm situations here.

You should note that a siren test is carried out once a year – on the first Wednesday in February. This is a good time to check whether you have enough iodine tablets at home.

What happens if an event occurs?

The authorities use radio and other media to order measures designed to protect the population as well as possible against potential radioactivity leaks.

The most important thing to do is to avoid being outdoors; you should go into a building, close the windows and doors and turn off all ventilation systems. This prevents air contaminated with radioactivity from entering the building. It is vital to follow the authorities' instructions if such a situation occurs.

Another measure that may be ordered is to either ready or – in municipalities in which increased levels of radioactivity are likely – take iodine tablets.

When should I take the iodine tablets?

The thyroid gland is protected by the administration of non-radioactive iodine if the tablets are taken within a few hours prior to the danger posed by radioactive iodine occurring or, if this is not possible, as soon as possible during the first few hours afterwards. If the tablets are taken too early they lose their protective effect. It is therefore very important to follow the authorities' instructions and to take the tablets at the exact time the order is given. In addition, taking iodine tablets does not protect the body against the harmful effects of other radioactive elements (e.g. caesium, strontium) which may escape into the environment if a serious incident occurs at a nuclear power plant. The authorities will therefore always order other protective measures in addition to taking iodine tablets, e.g. staying at home or in the basement or evacuation of the affected population.

In which municipalities do iodine tablets have to be taken?

When radioactivity is leaked, the authorities use various parameters (radiation intensity, wind speed, wind direction, etc.) to determine exactly which municipalities will be put at risk by radioactivity. They order appropriate measures to protect the population in these municipalities. One of these measures may be the administration of iodine tablets.

Should I leave my flat / the building if an incident occurs, or is it better to stay inside?

If an incident occurs, the authorities will communicate the protective measures that must be taken. You should turn on the radio or consult other media in all cases and follow the instructions given by the authorities. The affected population will usually be ordered to go inside a building and to shut the windows and doors. The authorities will also say how long people must stay inside the building or for how long they should not leave the building under any circumstances.

What happens if I'm not at home but out and about when an incident happens? Should I always have my tablets with me just in case?

No, that isn't necessary. Iodine tablets are also distributed to all workplaces and public facilities within 50 km of the nuclear power plants in Switzerland.

TAKING THE TABLETS

How should I take the iodine tablets?

Iodine tablets should be taken with plenty of liquid and preferably not on an empty stomach. They can be made easier to swallow by dissolving them in a drink of your choice. This solution cannot be kept for any length of time and should therefore not be prepared until shortly before it is taken. It is also possible to crush the tablets and mix them into yoghurt.

What happens if you don't take the iodine tablets after an incident has occurred at a NPP?

Radioactive iodine will get into the thyroid gland and expose it to radiation from the inside, and in this way can damage it. This can lead to thyroid cancer. Children and adolescents are at higher risk of developing thyroid cancer as a result of exposure to radioactive iodine.

I can't press the tablets out of the blister. What should I do?

The blisters are protected by a white child-resistant film. This must be removed first. The tablets are then easy to press out of the blister.

How many iodine tablets should I take and for how long?

- Adults: Take 2 tablets at once per day
- Newborn babies (also breastfed infants of treated mothers) up to 1 month old: ¼ tablet once
- Children between 2 months and 3 years old: ½ tablet per day
- Children between 4 and 12 years old: 1 tablet per day
- Children over 12 (like adults): Take 2 tablets at once per day
- Pregnant and breastfeeding women: 2 tablets at once per day, on a maximum of 2 days

The authorities will communicate the length of time for which the tablets should be taken. The above restrictions apply to pregnant and breastfeeding women and to newborn babies up to 1 month old even if the authorities order children and adults to take these tablets for several days in succession. Newborn babies are given ¼ of a tablet just once, pregnant and breastfeeding women take 2 tablets on a maximum of 2 days.

Iodine tablets are not recommended for people over 45 years of age. People over 45 who are considering taking iodine tablets if an incident occurs can obtain further information from their doctor, pharmacy or drugstore.

Does it help to take more than the recommended amount?

No.

Why does the pack contain many more iodine tablets than I need to take?

Each pack of potassium iodide 65 SERB tablets contains more tablets than one person needs if an incident occurs. This means that, should an incident occur, everyone will be able to provide others, e.g. relatives, friends, neighbours or visitors, with tablets should they not have their own with them. In addition, this enables tablets to be provided for people who are only in the municipality for a short time, or who have only recently moved to the municipality, or who do not have their own iodine tablets for other reasons.

CHILDCARE

Are teachers in schools and people working in childcare facilities permitted to give iodine tablets to children?

Under the Dosage Administration Concept specified in Article 8, Paragraph 3 of the Ordinance on the Provision of the Population with Iodine Tablets and Annex 2 of the Ordinance on the Federal Civil Protection Crisis Management Board, the National Emergency Operations Centre (NEOC) is authorised to order the issuance of iodine tablets as an immediate action in response to a corresponding event. The iodine tablets concerned are a medicinal product as defined in the Therapeutic Products Act (TPA). The issuance of medicinal products is basically regulated by the TPA. For such issuance purposes, potassium iodide is a Category D medicinal product, which means that it may basically only be issued under specialist guidance from a person qualified to do so (in accordance with Article 43 of the Ordinance on Medicinal Products). In the context of emergency response measures, however, the usual issuance requirements under the Therapeutic Products Act are overridden by the Ordinance on the Provision of the Population with Iodine Tablets, as is specified in the Radiation Protection Act. On the basis of the above, potassium iodide tablets are issued in accordance with the Ordinance on the Provision of the Population with Iodine Tablets at various levels (Swiss Military Pharmacy households; issuance centres schoolchildren, employees etc.; pharmacies and drugstores additional issuance in the event of an emergency, etc.; see also Articles 3 and 5 of the Ordinance on the Provision of the Population with Iodine Tablets). The corresponding specialist guidance is assured in such cases via specific information provided by the relevant authorities. Under Article 3, Paragraph 2 of the Ordinance on the Provision of the Population with Iodine Tablets, iodine tablets are to be distributed to issuance centres such as schools and daycare centres which are located within a 50-kilometre radius of a Swiss nuclear power plant. Such provision implies by extension that the institutions concerned are authorised to issue such iodine tablets to children in the event of an emergency and if ordered to do so by the authorities. Parental responsibility (as defined in Article 296ff. of the Swiss Civil Code) includes the right and the obligation to take decisions on behalf of the child if the child is not yet able to do so themselves. Such responsibility also extends to decisions on medical or medicinal interventions. In accordance with Article 301 of the Swiss Civil Code, the parents are required to raise and care for the child with the child's best interests in mind and to take all the associated decisions unless and until the child is able to act in their own capacity. The parents are also required to raise the child in accordance with their circumstances and situation, and to promote and safeguard the child's physical, mental and moral development (Swiss Civil Code Article 302, Paragraph 1). Such care of the child also extends to the care of their health, and thus also to any issuance of medicinal products and the administration and consumption thereof. In view of the above, parents must be regularly informed about any issuance of potassium iodide by their school or daycare centre in response to a relevant event. To this end, the institutions concerned are advised to provide such information in a regularly-issued information sheet and/or via their regulations or similar channels. The right of self-determination includes the right of every individual to accept or decline medical or medicinal treatment. Since children in some age groups will not be capable of taking the corresponding decision on their own, and may also be unable to adequately communicate any pre-existing thyroid condition and/or allergies they may have, the responsibility for doing so rests with their parents. And when such parents are adequately informed, if there are reasons why their child should not be issued with iodine tablets, they will be able to take the appropriate action required. The above essentially also concurs with the position paper issued by the Northwest Switzerland Cantonal Pharmacies' Association (H 013.01) on 'Issuing and administering medicinal products from an "emergency pharmacy" in schools, companies,

holiday camps, associations and similar'. In a concrete event requiring the issuance and administration of such medicinal products, it may be unfeasible, in the circumstances, to obtain the requisite consent of the parents or other legal guardians concerned. The schools and daycare centres involved could obtain such consent from these parents or legal guardians in advance, in the form of a formal declaration of consent. But any such approach would also need to consider the length of the validity of any prior consent so given. The precise approach adopted should also be described in the emergency response manual of the school or daycare centre concerned.

When can children be sent home?

Corresponding instructions will be issued by the authorities by radio and other media.