

Frequently asked questions on Fortification of Salt.

1. What is iodised salt?

Iodised salt is common salt to which a very small quantity of an iodine compound has been added. Iodised salt looks, tastes and smells exactly like common salt and is used in the same way, and for the same purposes. Iodised salt is used to prevent iodine deficiency disorders (IDD).

2. What is iodine?

Iodine is a natural element, a mineral, and like carbohydrates, fats, proteins, and vitamins, is an essential constituent of human diet. Iodine is also called a “micronutrient” (like vitamin A and iron) because it is required in very small amounts by our body.

3. How much iodine does a person normally need?

The daily requirement of iodine for an adult is 150 micrograms. Pregnant women and lactating mothers however, need more iodine (200 micrograms on average).

The total iodine requirement for a person living up to 70 years of life would add up to less than a teaspoonful. However, as there is no storage organ for iodine in the body, it is necessary for iodine to be included in our daily diet. The usual sources of iodine containing foods are meat, fish vegetables, milk, cereals and water.

4. How do we become iodine deficient?

Our normal requirement of iodine comes directly or indirectly from crops grown on iodine rich soil and from fish and seaweeds. So, when the soil of any area lacks iodine, the crops too are deficient in this essential nutrient. People, who eat these crops regularly, do not get their requirement of iodine and ultimately develop iodine deficiency.

5. How is iodine used by the body?

The thyroid gland is an (endocrine) gland located in the front of the neck. Iodine is used by this gland to produce thyroid hormones.

6. Why is iodine important?

Thyroid hormones are essential for normal growth, development and functioning of both the brain and body. Lack of iodine results in deficiency of these hormones and results in a wide spectrum of disorders, collectively called iodine deficiency disorders (IDD). Iodine deficiency can lead to goiter, cretinism, deafness, dumbness, squint and mental retardation.

The most visible and easily recognizable sign of iodine deficiency is goiter. A goiter is an enlarged thyroid gland which can range in size from an invisible swelling to a monstrous growth in the neck.

7. Why is it important for a pregnant woman to have sufficient iodine in her diet?

In the mother’s womb, a baby/fetus needs a steady supply of iodine for the normal growth and development of its brain and body. Only the mother can provide this. But if the mother is iodine-deficient, the child too becomes iodine deficient. If the woman’s deficiency is severe, the child’s brain and body are seriously and permanently damaged and the child becomes a cretin, unable to hear, talk walk or think normally.

Iodine deficiency during pregnancy may also result in abortion or stillbirth. The critical period for brain growth is from conception to the first three years of life. Optimum iodine nutrition during this period is absolutely essential for normal brain development.

8. Does iodine deficiency in a child affect his/her performance in school?

In cases of mild iodine deficiency, even though the child looks normal, she/he will have mild mental retardation on closer examination. Children living in iodine-deficient areas could have an Intelligence Quotient (IQ) level 13.5 points lower than those living in iodine sufficient areas, which will affect his/her school performance.

9. Why is iodine added to common salt?

Salt is an ideal vehicle for addition of iodine as it is usually needed in fairly constant daily amounts. Salt is thus the most suitable food item for iodine fortification, and is effectively being used in many developed and developing countries. The techniques for iodization are simple and well established. The added iodine does not affect the appearance or taste of salt and is well accepted by the consumer.

10. Why can't iodine be taken separately, like other medicines?

An important fact about iodine is that although it is needed in tiny amounts, it is needed regularly, every day. If given like a medicine / vitamin, this would involve taking it daily for the rest of our lives. Salt, however, is something that is used by everyone, everyday. On an average, the same amount of salt (10 to 15 grams) is consumed every day. If this salt is iodized, then the population automatically gets the required amount of iodine.

11. Can everyone consume iodised salt? Will there be any harm if a person who is not iodine-deficient eats iodised salt?

All of us need only a certain amount of iodine to function normally. If this iodine is already available, the body will simply reject any additional quantities and excrete it unused through the urine.

On the other hand, if someone is deficient in iodine, the thyroid gland will use as much iodine as it needs and reject the rest. This makes iodine safe for everyone.

12. Can iodised salt be stored like normal salt? Is the iodine lost during storage?

YES, iodine salt can be stored like normal salt. However, as the iodine in the salt can be destroyed by prolonged exposure to direct sunlight and moisture, it is important to store the iodised salt in an airtight container made of plastic, wood, glass or clay, with a well-fitting lid. Similarly, if salt not packed well, iodine loss will take place during transit from production to consumption. Also, iodised salt should be consumed within twelve months of the packing date.

13. Can iodised salt be used like ordinary salt? Is there any loss of Iodine during cooking?

YES. Iodised salt can be used in cooking, or as table salt.

There is some loss of iodine during cooking (20%-40%). Therefore to compensate loss of iodine during distribution, storage and cooking, higher levels of iodine are added at the production stage.

14. Does sea salt provide sufficient quantity of iodine to meet the daily iodine requirements?

NO. Contrary to popular belief, sea salt does not contain adequate iodine (on an average only 2 micrograms of iodine per gram).

15. Can the daily consumption of iodised salt cure goiter, cretinism and other Iodine Deficiency Disorders?

NO. Cretinism is permanent and incurable, like many other iodine deficiency disorders, but is preventable.

Certain goiters can be “cured” in the early stages.

Regular intake of iodine, however, prevents goiter and other iodine deficiency disorders.

16. Is it also necessary to use iodised salt for livestock?

YES. Iodine deficiency affects domestic animals in much the same way it affects humans. Iodised salt improves the health and productivity of animals and reduces the number of stillbirths and miscarriages. In addition, cattle that are fed on iodised salt produce milk that is rich in iodine.

17. How long will we have to continue using iodised salt?

EVERYDAY, FOR ALL TIME TO COME. If one lives in an iodine-deficient environment, there is no likelihood of the deficiency being corrected at the source, namely, in the soil. On the contrary, the increased degradation of our environment is making the problem worse. Large scale deforestation, among other things, has led to increased flooding and erosion of the topsoil, which carries away the iodine. Using iodised salt every day is the only way to protect ourselves and our children from the tragic and completely preventable effects of iodine deficiency. It is a small investment towards helping our children, and their children, to get the best chance to grow up with healthy bodies.

18. How can we help to promote the use of iodised salt?

We need to work closely with health care providers, agriculturalists, non-government organizations, IDD experts, the salt industry, salt regulators, the government, policy makers, communicators, and educators, in creating awareness in the consumers for use of iodised salt.

19. How can we know if the salt we are using is adequately iodised?

There are two commonly used methods of testing iodine content in salt. One method is by using an iodine testing kit. When a drop or two of this solution is added to a teaspoon of salt, it will turn purple if the salt is iodised. Another method is by getting the salt tested in a laboratory (titrimetric method).

20. How can we ensure that people consume iodised salt?

If a law is enforced to ensure production of only iodised salt, it would enable everyone to consume iodised salt.

21. What is Double Fortified Salt (DFS)?

Double fortified salt is adequately iodized salt further fortified with iron either in the form of Ferrous Sulphate or encapsulated ferrous fumarate. These two formulations have been approved by Food Safety and Standard Authority of India (FSSAI). While production process of DFS with Ferrous Sulphate is developed by National Institute of Nutrition (NIN), Hyderabad, the alternative process of production of DFS with encapsulated ferrous fumarate is developed by MI and University of Toronto.

22. Why is salt a good vehicle for delivering nutrients and vitamins?

Salt is an ideal vehicle to use for delivering iron and iodine because it is a staple food that is used by everyone. It is an essential part of preparing and cooking food and is universally consumed. The successful and well established salt iodization infrastructure offers an opportunity to integrate iron as a second nutrient to tackle both iron and iodine deficiencies.

23. Who can benefit from DFS?

Anemia (iron deficiency) and iodine deficiency are most often found in infants to young children under the age of 5 and in women of childbearing age, predominantly in populations of developing countries. If taken on a regular/daily basis, these people would greatly benefit from a salt that is fortified with both iodine and iron.

24. What health/economic benefits can DFS provide?

The use of DFS in developing countries would not only help in improving the general population’s diet, but would also help reduce the health problems and health costs related to iodine and iron deficiencies. The DFS would be a benefitting component to the search for a solution to treat anemia and iodine deficiency disorders at a very minimal increase in cost and in a simple, feasible manner.

25. What does DFS contain?

The DFS product composition is indicated in the table below:

Sl. No.	Characteristic	Requirement	
		Ferrous Sulphate	Encapsulated Ferrous Fumarate*
i)	NaCl content of the salt used for the production of DFS, percent on dry weight basis	99	98
ii)	Moisture, percent by mass, Max	1.5	1.5
iii)	Water insoluble matter, percent by mass, on dry basis, Max	1.0	1.0
iv)	Chloride content (as NaCl), percent by mass, on dry basis, Min	97.0	97.0
v)	Matter insoluble in dilute HCL, percent by mass on dry basis, Max	0.30	0.30
vi)	Matter soluble in water other than sodium chloride, percent by mass, on dry basis, Max	2.5	2.5
vii)	Iron content (as Fe), ppm	850-1100	850-1100
viii)	Iodine content, ppm, Min	30	30
	a) Manufacturer’s level b) Distribution channel including retail level	15	15
ix)	pH value in 5% aqueous solution	3.5-5.5	3.5-7.5
x)	Sulphate (as SO4), percent by mass, Max	1.1	1.1
xi)	Magnesium (as Mg), water soluble, percent by mass, Max	0.10	0.10
xii)	Phosphorous (as P2O5), ppm	2,800-3,100	Not more than 3,100
Xiii)	Sodium hexametaphosphate (SHMP), percent by mass on dry basis, Max	1.0	1.0

* Provided that DFS may contain food additives permitted in appendix A and Hydroxy Propyl Methyl Cellulose, Titanium Dioxide, fully Hydrogenated Soyabean Oil, Sodium Hexametaphosphate (all food grades) at concentration of not more than GMP and anti-caking agent not more than 2.0 per cent on dry basis and the water insoluble matter wherein anti-caking agent is used shall not exceed 2.2 percent.

26. How can consumers use the DFS and what is the recommended daily dose?

DFS is designed for use as a regular salt for cooking and as table. Saltiness of the food will limit excess use of DFS by accident. Based on an estimated average salt consumption of 10 g per person/day, the DFS is designed to provide 100% daily requirement for iodine and 30% for iron.

27. How stable is the DFS and DFS Premix? How long can it retain its nutritional value?

Stability tests conducted in the laboratory settings as well as in field distribution and storage conditions have shown that the DFS is stable even in humid tropical climates with high temperatures, and are acceptable for human consumption as an alternative to iodized salt. The suggested shelf-life is 12 months from the date of opening the package for the DFS.

28. What is the outcome of the DFS taste and color? Is it acceptable?

Consumer acceptability tests indicated that most consumers find DFS to be acceptable in terms of taste and color. The majority of consumers considered DFS more acceptable when considering its enhanced nutritional value compared to iodized salt. Sensory acceptability tests under typical household use, preservation and cooking practices in refugee camps and community feeding programs showed that DFS is well consumed as a replacement for iodized salt. DFS has been designed for use in cooking and as table salt in a similar daily usage of iodized salt.

29. How much does DFS fortification cost?

At present DFS is available in limited scale in commercial market. One Kilogram of DFS costs INR 14 to 25 in retail level.

30. Where is DFS produced and where is the DFS program currently in use?

Iodized Salt producers can produce DFS. Government of Tamil Nadu is using DFS in Mid Day Meal and ICDS programs across the state.

31. Is DFS efficacious?

Studies conducted by NIN and MI using different types of DFS shown improvement in condition of anaemia in target population. Hence, it could be concluded that DFS could be one of the effective food fortification strategies to address anaemia.

32. How to store DFS?

DFS should be stored in the same way as iodized salt. Both iodized salt and DFS should be stored in a closed container away from sun light.

33. How to use DFS while cooking?

While cooking DFS should be added in the similar fashion of iodized salt which should be applied towards the end of cooking process as per taste.