



*Signs, Symptoms,  
and Solutions*

*for Poor Thyroid Function*

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## INTRODUCTION

Hypothyroidism is far more prevalent than once thought, afflicting more than 30 percent of people worldwide<sup>1</sup> and nearly 5 percent of the entire US population age 12 and older.<sup>2</sup>

Numbers in the US are probably much higher for adults age 19 and over, though, because the chances of developing hypothyroidism increase as you grow older. In fact, some studies show that even though they may not be aware of it, up to 67 percent of American adults with no symptoms at all may still have suboptimal thyroid function.<sup>3, 4</sup>



Perhaps that's why Synthroid, a synthetic drug used to treat hypothyroidism, has edged-out statins in a list of America's best-selling drugs, and is now ranked at the top of the most-prescribed drugs in the US.<sup>5</sup>

Got [cold feet](#)? Dry skin and thinning hair? Or, do you have unexplained weight gain, constipation, and an intolerance to cold? These and several other conditions can all be symptoms of hypothyroidism.<sup>6</sup>

The most frequent cause of suboptimal thyroid function is an autoimmune disease called Hashimoto thyroiditis, but many other factors such as diabetes and certain prescription drugs such as statins (which have been linked to thyroid cancer)<sup>7</sup> can also cause it. Additionally, radiation therapy, or simply a lack of iodine in the diet can also cause your thyroid not to work properly.<sup>8</sup>

## IODINE IS KEY FOR THYROID HEALTH

Thyroid hormones are used by every cell of your body to regulate metabolism and body weight by controlling the burning of fat for energy and heat. Thyroid hormones are also critical for growth and development in children.



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A large part of the thyroid hormone molecule is iodine, an essential, trace element that is key to a healthy thyroid and efficient metabolism. What this means is that even though the body needs iodine, it cannot make it; therefore, you have to get it either from the foods you eat or from proper supplementation.

Iodine is so important to your thyroid that even the names of the different forms of thyroid hormone reflect the number of iodine molecules attached—T4 has four attached iodine molecules, and T3 (the biologically active form of the hormone) has three—showing what an important part iodine plays in thyroid biochemistry.

T3 is the most active, and is the one that directly affects the tissues. Together, T3 and T4 can affect metabolism, brain development, breathing, heart and nervous system functions, body temperature, muscle strength, skin dryness, menstrual cycles, and cholesterol levels.<sup>9</sup>

Looking at nutrition alone, you'll find that iodine deficiency is one of the three most common nutritional deficiencies, along with iron and vitamin D.<sup>10</sup> Examples of serious iodine deficiency disorders include goiter (enlarged thyroid gland), reproductive impairment, cretinism, various growth and development problems in children, and decreased child survival.<sup>11</sup>

But most importantly, iodine deficiency is the most [preventable cause of mental retardation](#) in the world!<sup>12</sup>

## IODINE'S IMPORTANT FUNCTIONS

More than 100 years ago, iodine was shown to reverse and prevent goiter (swelling of your thyroid gland) and to correct hypothyroidism. But we now understand that iodine's effects are much farther-reaching, and that iodine has at least four important functions in your body that we didn't know about back then



1. Stabilization of metabolism and body weight, as well as metabolism of carbohydrates, fats, proteins, vitamins, and minerals in the body<sup>13</sup>
2. Growth and development of the brain and central nervous system, particularly in children, from 15 weeks' gestation as a fetus, to age 3 years.<sup>14</sup> (According to the National Institutes of Health, iodine deficiency during pregnancy can be serious for both mother and baby.)<sup>15</sup>
3. Fertility and ovulation in women<sup>16</sup>
4. Optimization of your immune system<sup>17</sup> (Iodine is a potent anti-bacterial, anti-parasitic, anti-viral, and anti-cancer agent<sup>18</sup>)

Knowing this, you would expect to see an increase in [hypothyroidism](#) with insufficient iodine levels,—especially in those who are cutting back on table salt, which for decades has been some people's main source<sup>19</sup> of iodine.

And that is *exactly what we have seen*.

That's why, if you feel [sluggish, fatigued, and tired, have difficulty losing weight, and have dry skin, hair loss, constipation, and/or cold sensitivity](#), it's possible you may actually have an iodine deficiency problem.

*It's also notable that as iodine levels have fallen worldwide, there have been simultaneous increases in rates of thyroid disease, breast cancer, fibrocystic breast*

*disease, prostate cancer, pregnancy-related problems,<sup>20</sup> and obesity in American adults, as well as an increase in mental retardation and developmental delays in American children.*

Critics may assert that “correlation doesn’t equal causation” for the above conditions and diseases, but both the NIH and the National Academy of Sciences report that we do have studies indicating a connection between iodine levels and those health issues.<sup>21, 22, 23</sup> In fact the connection of iodine to these diseases has been so established that iodine is also now being used to treat fibrocystic breast disease, and to prevent breast cancer as well as eye disease, diabetes, and heart disease.<sup>24</sup>

## WHAT ARE THE MAIN SOURCES OF DIETARY IODINE?

A healthy adult body contains 15-20 mg of iodine, 70-80 percent of which is stored in the thyroid gland. The thyroid uses this iodine in the form of iodide.<sup>25</sup>

The fact that your thyroid transports iodine only in its ionized form (i.e. iodide) is straight out of the textbooks. Your thyroid reduces iodide ( $I^-$ ) into iodine ( $I_2$ ) for use in formation of thyroglobulin. Your body doesn't utilize iodine directly. It has to split the  $I_2$  into two  $I^-$  ions, which is an oxidative reaction that causes oxidative stress.

Iodide transporters are located in other areas of your body besides the thyroid gland, including your breasts and colon. But still, this iodide must come from iodine, and that is something you have to get through what you eat and drink, or through a supplement.

Since most of the earth's iodine is found in the oceans,<sup>26</sup> it's not surprising that the top natural food sources for iodine come from the sea, such as scallops, shrimp, sardines, salmon, cod, and sea vegetables like kelp and algae. Other sources include eggs, commercial, non-organic yogurt, and cow's milk (due to the use of iodine feed supplements in the dairy industry),<sup>27</sup> and iodized salt.



Iodine can also be found in the soil, which then affects the iodine content of crops, but the iodine content in soil varies widely depending on the region, and is not considered an adequate source for most people.<sup>28</sup> For that reason, iodine supplementation programs are prevalent worldwide.

Iodine as a food supplement usually comes from chemical additives in processed foods and table salt. Fruits and vegetables also contain iodine, but again, the amount varies depending on the soil, fertilizer use, and irrigation practices.<sup>29</sup>

## WHY ARE IODINE LEVELS DROPPING?

Iodine deficiency is on the rise in the United States.<sup>30</sup>  
<sup>31</sup> It is particularly profound in the Midwest and Great Lakes region, which is far inland from the oceans, and which once was coined the “goiter belt” because of its high incidence of goiters there. While the use of iodized salt has helped cut back on reported goiters both in the Great Lakes region and across the US, iodine deficiency is still an ongoing problem, particularly among pregnant women.<sup>32</sup>



One reason for diminishing iodine levels is because most natural food sources have low iodine content. Nonetheless, for decades we were still able to get about 25 percent of our iodine from wheat consumption because iodine was used to process flour, which was then used to make breads, cereals, and other wheat products. But the wheat/bread source dried up when food processors began using bromide—which enhances the appearance and texture of dough—and other chemicals in place of iodine.

Additional factors contributing to falling iodine levels are:

- Diets low in fish, shellfish, and seaweed
- Vegan and vegetarian diets
- Less use of iodide in the agricultural industry
- Use of [radioactive iodine](#) in many medical procedures, which competes with natural iodine

## CRYING WOLFF

Another reason iodine fell out of favor, resulting in toxic substances taking its place in food products, is referred to as the “[Wolff-Chaikoff Effect](#),” the culmination of a bungled experiment that has been a disaster for public health.

This experiment resulted in a case of hypothyroidism which researchers *misinterpreted* as being caused by *excessive* iodine intake. However, the individual in the study was given *intravenous radioactive iodine*—which is toxic. It had nothing to do with the iodine we get from food or supplement intake. The two methods of iodine ingestion are completely different, yet, tales of this experiment quickly spread, creating a fear of iodine that caused it to be systematically removed from the American food supply for the past three decades.

Coupled with a reduction in the use of table salt, iodine levels in modern times were destined to plummet without some sort of supplementation.

Unfortunately, simple supplementation may not be the answer to widespread iodine deficiency because we need to tackle some other problems first—and that is to reduce, or preferably eliminate, our exposure to, and reliance on, [toxic competing halogens \(bromine, fluorine, chlorine, and perchlorate\)](#).

You absorb halogens through your food, water, medications, and environment, and subsequently, they selectively occupy your iodine receptors, further deepening your iodine deficit.

## THE TOXIC HALIDES—IODINE’S FIERCEST COMPETITORS

Iodine is a member of the class of “halogens” that includes bromine, fluorine, and chlorine. When these halogens are chemically reduced, they become “halides”: iodide, bromide, fluoride, and chloride. These are the forms you usually encounter in your foods, beverages, medications, and environment.

Iodide and chloride are beneficial in small amounts, but bromide and fluoride are toxic. They grab on to your iodine receptors, blocking the action of iodide and thyroid hormones, and contributing to many serious diseases.

One of the main problems with the toxic halides is they become stuck in your body—there is no known detoxification pathway for bromine or fluorine. Your body simply cannot break them down. So they build up in your tissues and wreak havoc on your health.

## BROMIDES

Bromides are a menace to your endocrine system and are present all around you. Bromine poisoning is a serious concern because of its endocrine-disrupting [link to cancer](#).

Even so, it's no secret that the use of potassium bromate as an additive to commercial breads and baked goods has been a huge contributor to bromide overload in Western cultures. That's because the FDA still allows the use of potassium bromate in flour in the US, even though it's been banned by the World Health Organization and numerous countries around the world including China, the United Kingdom, and Canada.<sup>33, 34</sup>

Bromides in different forms are also still in some prescription and over-the-counter medications such as nasal and asthma inhalers, and in personal care products and cosmetics. For example, sodium bromate can be found in some permanent waves, hair dyes, and textile dyes. Even trace amounts of bromine in some cosmetics can trigger severe acne in sensitive individuals. And who needs skin care products that cause acne?

Brominated vegetable oil (BVO), which is derived from soybean and corn, is also still used as a stabilizer and emulsifier in many citrus-flavored soft drinks in the US.<sup>35</sup> In spring 2014, both Coca-Cola and Pepsi Cola announced that they would be removing BVO from their drinks sometime in the future.<sup>36</sup> However, this same form of bromine is also found in fire retardants used in carpets, mattresses, upholstery, furniture, and some medical equipment.

Methyl bromide is a pesticide that is manufactured from naturally occurring bromide salts. Used in a gas form to fumigate buildings for termites, other insects and rodents, it's also a pesticide for crops such as tomatoes and strawberries.<sup>37</sup>

Additionally, bromine/bromides are found naturally in groundwater and in trace amounts in grains, nuts, and fruits.<sup>38, 39</sup> With this many possibilities of exposure to bromides, no wonder we're a nation of iodine-deficient people!

You can find more information on how processed foods, beverages, and even your drinking water can adversely affect you because of the bromine, chlorine, and fluorine levels in them by reading [this Mercola article on the topic](#).

## SO HOW DANGEROUS ARE BROMIDES?

Research by the Committee on Mutagenicity (COM) in the United Kingdom found in 1988 that potassium bromate has the ability to produce chromosome damage “both *in vitro* and *in vivo*.” The COM later confirmed that bromate not only is genotoxic and carcinogenic, but that there is “no evidence of any threshold for these effects,” and recommended that bromate levels in drinking water be kept as low as possible.<sup>40</sup>

Based on animal research, bromides have also been linked to behavioral changes and neurodevelopmental disorders, including [attention deficit disorders](#), in children. The dangers of BVO alone are potentially very serious, depending on how much BVO-laced soda you consume: according to a 2011 *Scientific American* article, some people who binged on these sodas have ended up seeking medical attention for skin lesions, memory loss, and nerve disorders, all symptoms of bromine poisoning!<sup>41</sup>

Given the apparent dangers of bromides to your health and environment, it’s disappointing that the United States has refused to follow its counterparts in putting an end to the egregious practice of allowing bromine chemicals in your foods and products. Even China—a country that is notorious for having questionable product quality guidelines—has banned methyl bromide use in farming, beginning in 2015.<sup>42</sup>

So what’s taking us so long?

Again, the almighty dollar trumps health concerns when it comes to corporate America—as evidenced by [this corporate document](#) complaining that the US is one of the largest users of a special exemption given by the United Nations, which allows the US to continue using methyl bromide in farming.

## FLUORIDE/FLUORINE

Small amounts of fluorine are naturally present in water, air, plants, and animals. However, we can also be exposed to fluorine through dangerous gases released by industries, and subsequently through sediment in water exposed to those gases. Since fluorine can't be destroyed, when it ends up in the soil, it becomes strongly attached to the soil particles, and can accumulate in plants.<sup>43</sup>

One of our most frequent exposures to fluorine, however, is through fluoridated water and oral health care products. This exposure is something we CAN do something about, as [many communities across America](#) are doing, by demanding that fluoride be taken out of our drinking water.

The “takeaway” message here is clear: the more you can rid your body of the toxic halides, the more iodine your body will be able to hang onto, and the better your thyroid will function.

## PERCHLORATE

Perchlorate is another threat to thyroid function. Perchlorate is both a naturally-occurring and man-made chemical that is present in bleach, fertilizers, rocket fuel, fireworks, flares, and explosives. It also can be found as a contaminant in drinking water. While the US Environmental Protection Agency is still evaluating the health effects of exposure to perchlorate, as well as developing a proposed national regulation for drinking water, scientific research indicates that perchlorate “can disrupt the thyroid’s ability to produce hormones needed for normal growth and development.”<sup>44</sup> That’s why we also must make sure that the water we drink is filtered properly to keep this contaminant out.

## GETTING YOUR IODINE LEVELS UP

If you are iodine deficient, there are numerous ways to build up your iodine levels besides simply loading up on iodized table salt. But first, you need to know what your iodine levels are.

Author and [patient advocate Mary Shomon](#) is one of the leading educators on thyroid health in the US. Besides being a best-selling author of a book on hypothyroidism that has more than 20 printings, she's been featured in hundreds of television and major print media, including ABC World News Tonight, *The Wall Street Journal* and *Ladies Home Journal*, to name a few.

In her best-selling book, *Living Well with Hypothyroidism: What Your Doctor Doesn't Tell You*, Mary cautions thyroid patients not to run out to the health food store and load up on iodine or iodine-rich supplements like kelp and bladderwrack.

That's because *in someone who is not iodine-deficient*, excessive iodine supplementation can actually worsen a pre-existing thyroid condition, or trigger further thyroid dysfunction. The key is in getting the right amount of iodine—not too much, not too little.

Therefore, the [best way to evaluate](#) whether you have thyroid disease is to consult a trained practitioner who will make his or her diagnosis based on numerous factors including a clinical (physical) evaluation, blood tests, imaging tests, and possible biopsies and urine tests. Depending on the clinician and your symptoms, other diagnostics tests and procedures may also be done, such as saliva and iodine patch tests. Your doctor or clinician may also order [tests based on specific hypothyroid diseases](#) such as goiter and Graves' disease.

## FOOD SOURCES VS. SUPPLEMENTS

It's typically better to obtain a nutrient from a natural food whenever possible than from a supplement, so use supplements only as a last resort. That's why I recommend [adding sea vegetables to your diet as a start toward thyroid health](#). The best source of organically-bound iodine that I know of is non-commercially harvested seaweeds. A chart of seaweeds and vegetables with the recommended daily allowances (RDA) as determined by the National Academy of Sciences is [here](#), where you can compare iodine content of select sea vegetables to their RDA.

Some patients report that they respond better to food-based forms of iodine—like seaweeds—than the supplement forms. However, if you are going to use a supplement, supersaturated iodine (SSKI), a potassium iodide supplement which is available as an inexpensive prescription, may be an option. (SSKIs are often used to protect the thyroid gland from injury due to radiation.) Typically, 1-3 drops a day are all that are required for an adult; but be sure to check with your physician for an appropriate dose once you've determined that you do have a thyroid deficiency. For children and babies, do NOT supplement without consulting your child's pediatrician or endocrinologist.<sup>45</sup>

Special note: I personally recommend taking an iodine supplement in the event of some type of nuclear fallout. But taking potassium iodide when it is not absolutely necessary [could result in thyrotoxicosis](#). That's why it's far preferable to optimize your iodine through the natural intake of foods, or if you do plan to use a synthetic or natural supplement, consult your physician or endocrinologist first.

Please [avoid using Lugol's solution, as that can actually worsen your thyroid condition](#). In fact, Lugol's is often used as an anti-thyroid medicine to decrease the amount of thyroid hormones in your body, in preparation for the surgical removal of the thyroid gland.<sup>46</sup>

For more information about the research that makes me question recommending iodine via Lugol's solution, please see these studies:

- [Journal of Toxicology and Environmental Health](#) 1992, 37:535-548 "Evidence of Thyroxine Formation Following Iodine Administration in Sprague-Dawley Rats"

- [Journal of Toxicology and Environmental Health](#) 1991, 32:89-101 “Comparison of Toxicity Induced by Iodine and Iodide in Male and Female Rats”
- [Journal of Toxicology and Environmental Health](#) 1998, 55:93-106 “Comparison of the Effects of Iodine and Iodide on Thyroid Function in Humans”
- [Biological Trace Element Research](#) 2006, 110:193-209 Analyses of Toxic Metals and Essential Minerals in the Hair of Arizona Children with Autism and Associated Conditions, and Their Mothers”

Remember, keeping your iodine levels optimal is particularly important if you are a woman contemplating pregnancy, or are already pregnant. Make sure you are taking seaweed or a prenatal vitamin with the right amount and form of iodide, not iodine, to protect your baby.

## TIPS FOR OPTIMIZING THYROID FUNCTION

Dr. Mark Hyman has dedicated his career to identifying and addressing the root causes of chronic illnesses through a whole-system medicine approach known as functional medicine. He is a [family physician and eight-time \*New York Times\* bestselling author](#). Currently, the medical editor at the Huffington Post and on the medical advisory board at The Doctor Oz Show, Dr. Hyman has made [some good recommendations](#) if you have a sluggish thyroid:

- Identify and treat underlying causes (e.g., iodine deficiency, hormone imbalance, environmental toxicity, and inflammation) as I've already mentioned above
- Adjust your diet and understand the role of nutrition (iodine, as well as tyrosine, selenium, vitamins A and D, zinc, B vitamins, and omega-3 fats), food allergies, gluten intolerance, and foods that contain goitrogens, such as soy, which interfere with the utilization of iodine
- Get plenty of exercise
- [Reduce your stress](#)
- Use other supplements such as vitamin D3, if necessary, for whole-body nutritional support
- If you are on thyroid hormones for less than five years, Dr. Hyman says many people find that they respond far better to natural thyroid hormone supplementation that has T1, T2, T3, and T4 in it, rather than just T4 like Synthroid which according to the manufacturer, can have unwanted side effects if your dose is "off" even a little bit.<sup>47</sup>

Armour Thyroid and Nature-Throid are the best known natural commercial supplements. They are animal-based<sup>48, 49</sup> but compounding pharmacists can also produce natural thyroid hormone prescriptions.

## GREAT RESOURCES FOR LEARNING MORE

And finally, one of the best sources for learning more about iodine and thyroid disorders is [Dr. David Brownstein](#), a board-certified family practitioner who utilizes both conventional and holistic medicine. His book, *Iodine: Why You Need It, Why You Can't Live Without It*, explains what forms of iodine you need and why there is not enough iodine in table salt to prevent disorders and diseases associated with hypothyroidism. He and his partners Drs. Richard Ng and Jeffrey Nusbaum, have a wide range of experience in natural health as well as iodine deficiency problems and are trained in, or have conducted educational research and training in thyroid disorders.

A non-profit organization, Coalition for Better Thyroid Care, is also a great resource for information on how to strategize and help keep thyroid patients informed. They have a [Facebook page here](#), if you like using social media.

And, for more information on why too much iodine can be as bad as too little, [please read this article](#) on Mercola.com.

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