

*"Our goal is that our team doesn't just return safely today, but also at the end of their careers.  
This booklet outlines a lot of how we're going to make sure they do."  
- Chief Kraig Biefeld, Watertown (WI) Fire Department*



**TRAIN**

**PERFORM**

**RECOVER**

How infrared saunas can help  
first responders at every stage.

**Jen Rudis**  
Jenerate Wellness





## INTRODUCTION

Everyone knows that fire fighting is an inherently hazardous profession. Injuries, and tragically, fatalities are just part of the job. Every department trains continually to minimize the number and severity of these all too common incidents. But what about the ones that don't present themselves until years or even decades after the event?

A broken bone can be diagnosed and treated immediately. But what about more insidious diseases common to those who dedicate their professional lives to saving others and their property?

The fact is, first responders face life-threatening diseases at rates that far exceed those of the general population. Every year, researchers learn more and more about them, and therapies that can help mitigate their long-term effects. Across the United States, chiefs and departments now understand that disease prevention is as essential as quality training and ongoing maintenance. **The health and wellness of the fire fighter is now a primary 'part of the job.'**

As part of our commitment and mission, Jenerate Wellness has partnered with the Fire Fighter Cancer Foundation to provide the education, resources, and tools needed to safely detoxify the body with the use of infrared heat. Our saunas are proven to be an effective tool for reducing body levels of fat-stored chemicals and resolving the adverse effects associated with toxic body burden.

This booklet is an introduction to a field of study that is revealing and proving new ways to help departments and individual fire fighters fight back against the scourge of cancer and other life challenging diseases. You deserve the very best training, onsite support, and post-event care.

I hope you will take a few moments to learn more about how infrared saunas can help you **train harder, perform better, and recover faster**. And please, if you have any questions, contact me immediately. First responders deserve the very best—and I'd like to help in any way I can.

*- Jen Rudis*

*Owner, Jenerate Wellness*

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# THE HEAT THAT HEALS

Cultures from around the world have recognized the healing power of heat for millenia. Scientists are now probing into this universal understanding to reveal its deeper truths, and to gather the data that can be used to generate new therapies and procedures to fight disease, ease pain and actually help athletes, first responders, the military, and any others who have to perform at their peak whenever called to do exactly that.

**Heat works—**  
but as this section will prove, the **right kind of heat** works even better.

## There is an ancient saying:

***“Give your body a good fever, and there is no disease that can survive.”***

The truth of this statement has been proven on a personal level of centuries, but in the last 35 years, extensive research has been conducted by Japanese and European doctors on the therapeutic benefits of infrared radiant heat, and it has uncovered another important truth: **that some forms of heat are better than others.**

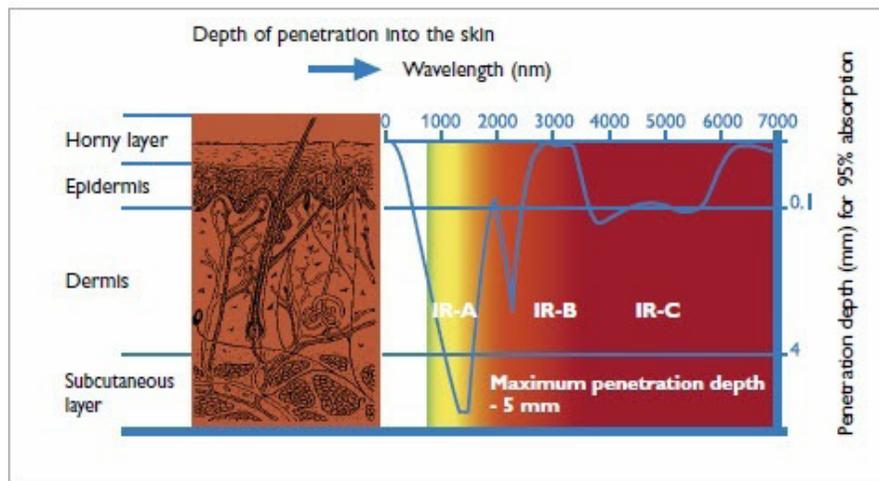
When you say the word ‘sauna,’ for most people, a series of images immediately spring to mind. A steamy room. Towel-draped people. A pail of water, a scoop and the occasional ‘whoosh’ of steam as water is poured over hot rocks. And for too many people, those images are a bit of a turnoff. Believe me, I understand that—so let’s get this straight from the very beginning; this booklet is NOT about that kind of sauna.

## The power of infrared.

Don’t get me wrong, the ‘hot rocks and water’ of a traditional sauna or Turkish bath can have many healthful benefits. But I am writing here about a heat that works far harder to do what fire fighters need it to do. Heat that is generated in a very narrow spectrum of light called ‘the infrared.’

## Your skin doesn’t just keep your organs in.

A lot of people forget that the human skin is not just an outer envelope of the body, it’s actually your body’s largest organ. It provides a wide variety of functions, and runs a lot deeper than you may think. And this is where an understanding of infrared light, and how it works, comes in.



As you can see in this graph, only one form of light energy penetrates fully throughout the several layers that make up the skin (IR-A), while its sibling forms (IR-B, IR-C) are able to penetrate to a certain depth. This ‘deep penetration’ capability is what makes it so powerful. A far infrared sauna uses the specific part of the spectrum. These two parts, both invisible, have a very different effect on the body.

Infrared is an invisible form of light energy that is accepted by the body as heat. It is that deep, inner warmth feeling you get when standing in the sun. The reason we get warm from an infrared heater is because our skin and clothes absorb the light energy. It’s like the difference between being directly in sunlight versus sitting in the shade. You feel warm in the sun because the light energy that hits your clothes and skin keeps you warm, but when you’re in the shade, the light energy (and its heating effect) doesn’t reach you as well.

The ambient temperature in the shade might be a comfortable 80°F, but stand too long in the sun, and your body will really feel it. **It’s the infrared that delivers the heat that in turn generates sweat**—and that, as you will see, makes all the difference when it comes to using heat as a means of decontaminating the body.

## Here's how an infrared heater works.

Light's visible spectrum goes from red (longer wavelength) up through violet (shorter wavelength), the colors of the rainbow. *Infrared* means "below red" just as *ultraviolet* (UV) means "above violet".

Ultraviolet (UV) light has been associated with many health risks such as laying in the sun too much or excessive exposure in tanning salons. Infrared light is at the exact opposite end of the visible light spectrum, and is associated with many positive and healthful benefits. It is completely safe when used appropriately and healthy for all living things. One can be exposed to infrared light for hours without the risk of burning. In fact, infrared is so safe, that it is what is used in hospitals to warm infants.

The heat energy generated by an infrared sauna heater can penetrate human tissue up to 2 inches deep. This wavelength of energy is therapeutic because of its ability to be absorbed by the body, and can be used to safely raise the body's core temperature. In most cases, your core body temperature will rise 2-3 degrees Fahrenheit (to over 102 degrees) within a 30-minute session.

## Far Infrared—the details.

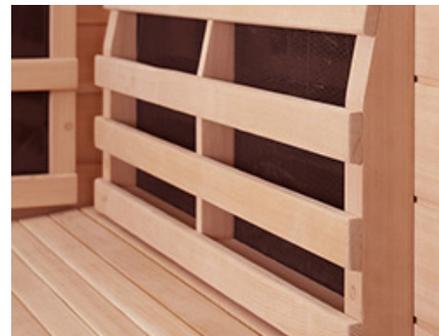
For years, the healthcare industry recommended infrared heat lamps as a source of infrared therapy, but the lamps were cumbersome, dangerously hot, and difficult to maintain at a constant temperature. Today, many healthcare professionals use a new generation of infrared heaters to treat a variety of diseases throughout the world.

Infrared is the longest wavelength of light energy, and can penetrate deep into the body to activate sweat glands. Since sweat is one of the few mechanisms the body has to get rid of toxins, and the skin is the largest organ in the human body, use of infrared energy is a very effective means for the decontamination of the body.

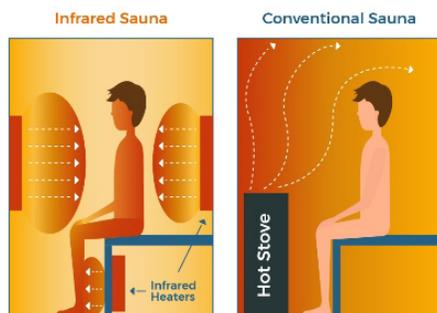
When far infrared waves are applied to water molecules (which make up to 70% of our bodies), the molecules begin to vibrate. This vibration weakens ionic bonds, and the eventual breakdown of the water molecules causes encapsulated gasses and other toxic materials to be released. Far infrared energy can also penetrate fat cells causing vasodilation. As fat cells vibrate, they expel toxins, resulting in greater levels of decontamination, while causing significant metabolic stimulation that can aid in weight loss.



*Traditional sauna heaters heat rocks to create steam throughout the sauna cabin.*



*Far infrared saunas use heaters (dark areas) to directly heat the body, stimulating the Sweat Cycle.*



## Far Infrared vs. Traditional Saunas

A sauna is a sauna, right? Wrong. The short story is that infrared heaters warm the body in the same manner as natural sunlight (as described above). Traditional saunas work differently, raising the temperature and humidity of the air in the cabin to a very high level to warm the body.

This heavy, humid, hard to breath, and extremely warm air (180-225°F) can be an uncomfortable experience. It could even pose a variety of potential health risks for some. Infrared saunas work on an entirely different principle.

Instead of heating *the air* within the enclosure, infrared saunas heat *the body* directly, creating a dry air environment within the cabin. The result is deeper tissue penetration. In an infrared sauna, the body perspires deeply, receiving all of the healthy benefits, but avoiding the potentially harmful, extremely hot, uncomfortably humid air of a traditional steam sauna.

# How hot's too hot?

Conventional saunas must rely on an indirect means of heat.

Far infrared saunas utilize a more effective 'direct to the body' heating strategy.

The operating temperature for a traditional steam or hot-air saunas range 180° to 225°F.

By comparison, far infrared saunas are best used at temperatures between 100° to 135°F.

## The heat source makes all the difference.

Infrared saunas use carbon/ceramic to produce invisible, far infrared heat. Infrared heat is very safe (depending on which sauna brand you choose), and not at all like the heat produced by microwaves. In an infrared sauna, 20% of the energy is used to heat the air, while the rest works directly on heating the body. This radiant heat penetrates deep below the skin, producing a gentle, gradual warming of the body's core temperature.

The temperature inside a far infrared sauna is adjustable and averages a comfortable 100°F to 135°F. These lower temperatures allow you to sweat faster and tolerate a longer sauna session, enabling greater therapeutic benefit. A typical infrared sauna sessions last 20 to 45 minutes and can be repeated throughout the week to maximize the benefits. Infrared saunas leave you feeling invigorated, not depleted like conventional saunas.



*Jacuzzi® Infrared saunas include built-in Bluetooth® speakers for easy music or podcast listening, video viewing, web-based training, and more.*

*NOTE: the careful placement of infrared heaters (dark areas in photo) surround the body to safely raise the core body temperature without overheating the head.*

## The 'Fever' effect.

The goal of every infrared sauna session is to imitate the practical effects of a "fever" that can deliver a healthy, deep decontaminating sweat at the cellular level (where the majority of toxins reside) in order to dissolve harmful substances and drive them to the surface via sweat for easy elimination. You can literally 'sweat out' toxins, and wash them off afterwards. But there's more to it than that.

## That post-fire smell? Gone.

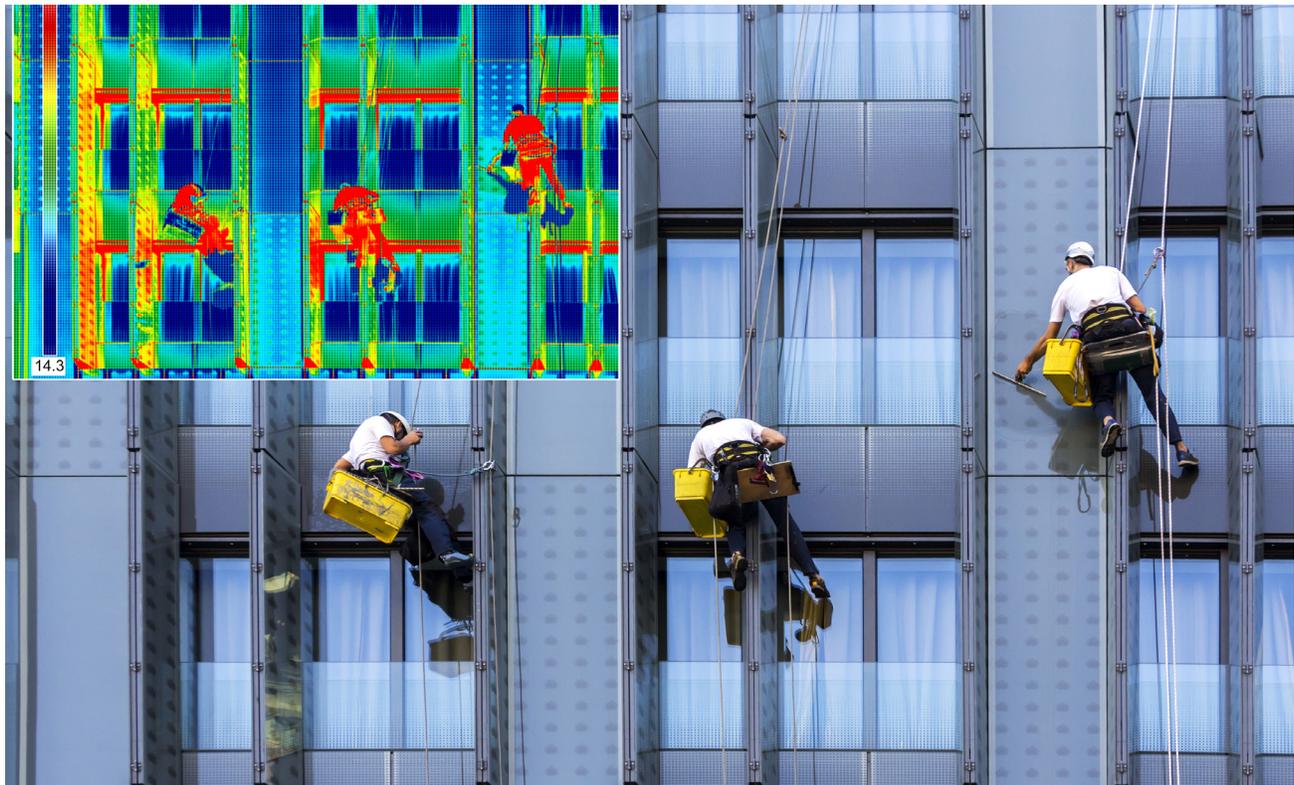
As with any new therapy, there are bound to be skeptics. But there's one very interesting side effect some fire fighters have noticed after a single session in an infrared sauna after working a fire: the smell is gone.

They are talking about that multi-day, 'can't get it out of my nose' smell that many fire fighters notice. Some have mentioned that what in the past took a week's worth of showers to get rid of is simply gone after a single session. While it's impossible to say that every fire fighter will experience such relief so quickly, it's pretty compelling personal evidence that the decontaminating effect of infrared saunas actually works.

**Can it work for you? It's certainly worth a try.**

## Is Infrared Safe?

Yes. Infrared heat is all around us, all the time. Check out this image:



Everything exposed to sunlight receives and emits infrared heat. This comparison image shows a scene of window washers in the visible spectrum (right) and the infrared spectrum (inset, upper left). The much cooler building elements (panels, windows, etc.) are shown in green to blue spectrum, but the three workers are clearly shown emitting infrared energy (in the yellow to red).

Human bodies both absorb and emit infrared heat naturally. To understand and experience infrared heat, take your hands and put your palms together. Now, move your hands about a half an inch apart. Feel that gentle, radiant heat between your palms? That's infrared heat generated by your body, and very similar to the far infrared heat that is generated by an infrared sauna heater.

## Carbon vs. Ceramic

There are two types of infrared technology on the market today: Carbon and Ceramic. Each can provide a safe, steady source of infrared heat, but by combining the two, I believe we have clear winner.

Carbon heaters produce *high quality*, long-wave infrared heat, but the problem is that they do not produce a *high quantity* of infrared heat. Ceramic heaters, on the other hand, are powerful and can emit a *high quantity* of infrared heat, but the wavelengths emitted tend to be shorter, thus less effective and therapeutic (*lower quality*).

## Yes, you can have high quality *and* high quantity.

The solution is somewhere in the middle, and that's why I recommend Clearlight True Wave™ Far Infrared Heaters. By combining Carbon and Ceramic technologies you get the best of both in a heater that's able to produce the kind of high quality / high quantity infrared heat that can produce the best results.

These heaters are comprised of micro-thin carbon fibers (1/1000th the thickness of a human hair) combined with a patented, micro-fine ceramic compound for higher infrared output (emissivity). Clearlight manufactures all its heaters in their own factory. This innovative technology produces a heater with tremendous output and high thermal emissivity. Each heater is tested under power for several hours and measured for the electrical draw, surface temperature, and EMF output in twelve locations.

## Creating sweat should be no sweat.

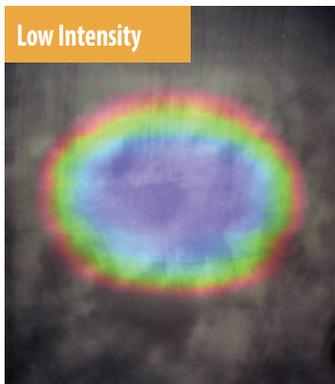
Creating a deep, body-cleansing sweat is the #1 goal of infrared sauna therapy for fire fighters. But while other brands recommend raising the user's cardio rate by working out in their saunas to heighten core body temp and heart rate, I firmly do not.

Quite simply, first responders coming back from a call don't need to elevate such things. They need to come down, hydrate, and recover from their 'personal best' performance peak. That's exactly why so many experts and scientists are so intrigued by the 'let the infrared heat do the work' downtime a quality far infrared sauna can provide.

## Job #1 is Recovery.

While an infrared sauna can really help during the TRAIN phase of standard firehouse operations, they really shine in the RECOVERY phase. The only thing required is that the fire fighter relax, breathe deep, and let the sauna do the work. The deep sweat needed to effectively decontaminate the body is gently generated by the carbon / ceramic heaters via the powerful, radiant infrared heat they provide. **Your job? Sit, sweat, and de-stress—and get ready to perform at your best the second the next call comes in.**

## Infrared heater technologies compared.



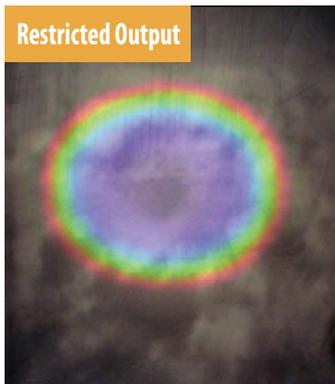
**Sand-Filled Ceramic Tube Emitter**

'Element Type' Ceramic heater displayed limited infrared intensity and projection.



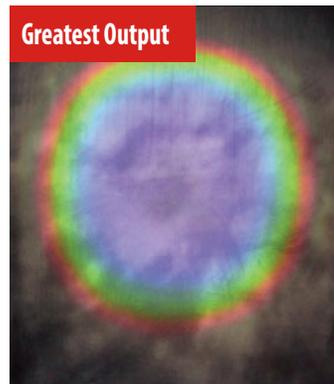
**Carbon Panel Emitter**

'Panel Type' Carbon-based heater displayed the least amount of infrared output.



**Concave Ceramic Emitter**

Concave Ceramic heater displayed a narrow and limited amount of infrared exposure.



**True Wave™ Carbon / Ceramic Emitter**

Clearlight True Wave™ heater exhibited far greater infrared output at optimal wavelengths.

This comparison of infrared heaters clearly shows the superiority of **Clearlight's True Wave™ combined Carbon / Ceramic technology** in terms of coverage area and consistent heat delivery throughout the field.

# The 411 on EMFs and ELF.

**Electromagnetic fields (EMF)** are energy waves with frequencies below 300 hertz or cycles per second. The electromagnetic fields we encounter daily come from every day things such as power lines, radar and microwave towers, television and computer screens, motors, fluorescent lights, microwave ovens, cell phones, electric blankets, house wiring and hundreds of other common electrical devices.

Levels of electromagnetic fields (EMF) from human-made sources have increased steadily over the past 50-100 years. Most EMF exposures come from increased use of electricity and new technologies. Consequently, the study of potential adverse effects from EMF exposure on human health has become an important topic of research. **In fact, the California Public Utilities Commission (CPUC) created the California Electric and Magnetic Fields Program to research and provide education and technical assistance on the possible health effects of exposure to EMF.**

**Extremely low frequency (ELF) radiation** is at the low-energy end of the electromagnetic spectrum and is often referred to as 'Electric Fields.' The most common ELF field is radiated by utility power lines. You are exposed to these fields whenever you are near electrical appliances of any kind.

The effect of the electric field strength on a person's body is defined as body voltage strength, and is expressed in millivolts (mV). Out in nature, far away from electrical sources, the human body's natural body voltage is near 0mV. **It has been found that when this body voltage rises, in sensitive individuals, it can cause disturbed sleep, irritating sensations and other ailments.**

If you're using an infrared sauna as part of your post-fire decontamination procedure, the last thing you need is exposure to other potentially health-threatening substances or effects. The solution here is shielding.

When considering the infrared sauna options for your home or facility, be sure to determine whether they are both low/no EMF- and low-ELF shielded. **And don't just take the manufacturer's word for it.** Ask to see any 3rd-party verified testing. If such data is not posted on the manufacturer's website, in their showroom, or easily accessible as a handout or brochure, chances are they are hiding that data for one reason: it doesn't exist.

Here's just one example of what I'm talking about. Using ultra-sensitive testing equipment, heaters are tested to measure the level of EMF they emit as measured in milligauss (mG). It is generally accepted that exposure to EMF should not exceed 3 mG.

Jacuzzi® Infrared Saunas <i>(equipped with Clearlight True Wave™ heaters)</i>	<3mG
Regular Carbon Heaters	70mG - 100mG
Ceramic Infrared Heaters	20mG – 40mG

***As you can see, all infrared saunas (and their heaters) are not alike. Some measure over 20 times above the 3 mG threshold of concern.***



Jacuzzi® Premier IS-5 model in cedar.

## Designed with your health in mind.

Clearlight True Wave™ heaters, the ones found in Jacuzzi® Infrared Saunas, were specifically designed for one thing only: the careful, deep heating of the human body. See how the heaters surround the body, even the lower leg (below the bench)? That's to ensure the safest, deepest body heating possible. Also note: the heat is directed to the body, not the head. Why? **To put the heat exactly where it's needed.**

Created by Dr. Raleigh Duncan, these heaters produce the right kind of far infrared heat to safely raise the core body temperature, and in turn, initiate the sweat / decontamination process.

*Jacuzzi®'s Infrared Saunas' Clearlight True Wave™ heaters surround the body.  
(Seen here in dark areas on the side and back walls)  
Shop all sauna models at [www.jwsaunas.com](http://www.jwsaunas.com)*

## Heater placement in the sauna.

One of the keys to effective detoxification in an infrared sauna is warming your body and raising your core body temperature. You want to find a sauna that heats both the back and front of your body. Many saunas on the market today leave the front heaters out or have very small front heaters for aesthetic reasons. This is a mistake; you simply cannot effectively detox in an infrared sauna without warming your front body core.

Some brands will needlessly run their heaters close to the ceiling. As we all know, heat rises. There is no need to heat the cabin air above your head, unless you plan to stand on the bench. High quality, effective infrared heaters are designed specifically to heat the body. Look for a sauna that has heaters installed in close proximity to where the body will be sitting, such as on the front wall, back wall, side walls, underneath the bench, close to your calves and in the floor.

Some heaters on the market consist of a single, thin rod in front of a metal reflector. Generally, these heaters produce lower-quality, far infrared heat when compared to a large flat-panel far infrared heater. The single-rod heater must run at a much higher surface temperature than a large, flat radiant heater to produce sufficient infrared heat. **As an interesting (and potentially shocking) side note, many such heaters were designed to cure paint in industrial settings.**

With carefully placed, high efficiency far infrared output (emissivity) of heaters like those found in Jacuzzi® Infrared Saunas, you not only get the highest quality infrared heat, but you get a lot of it—right where you need it.

## Don't forget the cabin.

As you can see, the quality of the heaters and the infrared heat they generate is fundamentally important. But so are the actual materials and finishes of the cabin in which they are housed. While all saunas are designed to look good, it's also critically important that the materials they are constructed of perform safely at standard operating temperatures.



Whenever any material is heated, it is subject to a significant change in state. What was static and stable at room temperature could turn into harmful gases or noxious substances at operating temperatures. That's why it's imperative that the sauna you select has been constructed of not only the finest woods, but finishes that are stable at such temperatures.

Jacuzzi® Infrared Saunas are one example. **They use only the highest quality wood, non-VOC adhesives, and natural beeswax detail finishing to ensure the safest experience possible.** In my opinion, there are no finer infrared saunas on the market, and their attention to detail is second to none. When it comes to my clients' health and wellness, only the very best will do. That's why I'm a proud endorser and provider of these world-class saunas.

Jacuzzi® Infrared Sauna models are available in grade "A" Clear Western Red Canadian Cedar or North American Basswood. This is not just any wood, it is Eco Certified®. That means it's been sustainably harvested in accordance to stringent international standards, and follows a fully documented 'Chain of Custody' (COC).

In addition, every Jacuzzi® Infrared Sauna has been certified by Electrical Testing Laboratories (ETL) as ETL and ETL-C compliant to assure you that every Jacuzzi® Infrared Sauna has been tested to meet both US and Canadian safety performance standards.

## Smart Sauna shopping—a checklist.

To make sure you're getting the best, most effective infrared sauna out there, consider these key points.

- What length of infrared wave is emitted by the heaters?  
(The longer the infrared wave emitted, the more effective the infrared heat will be for you.)
- Were the heaters 'purpose built' for heating the human body?
- What is the term of the warranty?
- What is covered by the warranty?
- Does the units EMF / ELF emissions exceed the EPA's  
3 mG threshold of concern?
- Consider the placement of heaters in the sauna cabin.  
Were they designed to heat the body from all sides?
- Are the heaters configured to protect the head from excessive  
heat exposure?
- Are all finishes and adhesives non-VOC compliant?
- What sauna capacity do you need?  
*See all the Jacuzzi® Infrared Sauna options at [www.jwsaunas.com](http://www.jwsaunas.com)*

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# THE MISSION: DECONTAMINATION

Just about every time a fire department rolls out, the fire fighters involved are likely to be surrounded by toxic gases, noxious chemicals, and all sorts of serious biohazards. That's why decontamination is so critical during the **RECOVER** phase of department operations. This section takes a deeper dive into both the 'why' and 'how' of effective decontamination / detoxification, and the many ways far infrared saunas can help make it happen.

# Why Is Decontamination / Detoxification Important?

The past 150 years have been a time of incredible progress in medicine, science and industry. Because of these advancements, we now enjoy longer, more productive lives. However, there are many who pay a tremendously high price for our modern lifestyle. The by-products of our chemical technology have resulted in ubiquitous contamination of our atmosphere, lakes, oceans and soil. Our natural environment is now permeated by a barrage of “unnatural” substances.

Many of the chemical sources have been in existence for centuries. However, today we are exposed to chemical concentrations far greater than were our ancestors. Although the human body is known to be accommodating, ecological alterations are now occurring at a faster rate than our bodies are able to adapt. We are now faced with a situation where inadequacies or uncertainties centering around the manufacturing, use, storage, and disposal of toxic chemicals have resulted in an overwhelming number of environmentally induced illnesses.

Since 1965, over 4 million distinct chemical compounds have been reported in scientific literature. Over 6000 new chemicals were added to this list between 1965 and 1978 alone. As of 1981, of over 70,000 chemicals in commercial production, 3,000 have been identified as intentionally added to our food supplies and over 700 in drinking water. During food processing and storage, 10,000 other compounds can become an integral part of many commonly used foods. Added to this list of potential body toxins, petrochemicals, industrial waste, medical and street drugs, radiation (X-rays, nuclear fallout etc.) and tons of pesticides, herbicides, and insecticides, the result is an incredible chemical avalanche to have befallen the human race in a relatively short period of evolutionary history.

There is currently a wealth of scientific evidence showing that thousands of drugs, preservatives, pesticides, and other pollutants remain stored in the body long after exposure. We know for example that an organochlorinated pesticide such as the metabolites of DDT has a half life of between 20 and 50 years in the fat deposits of humans. According to the U.S. Environmental Protection Agency over 400 chemicals have been detected in human tissue; 48 were found in adipose tissue, 40 in breast milk, 73 in the liver and over 250 in the blood.

## The Big Deal re: “Bio-Accumulation.”

The process of bodily accumulation and storage of toxins is known as “toxic bio-accumulation”. Though the predominant storage site in the body is the fatty tissue, toxins may re-enter the bloodstream during times of physical stress (i.e., illness, fasting, excessive heat, exercise) or emotional stress. Every organ that is accessible to these chemicals, which have been mobilized or released from the fat, is being continually exposed at low levels.

As stated by Dr. William L. Marcus, Senior Advisor and Chief Toxicologist for the U.S. Environmental Protection Agency, **“It’s a chronic exposure. That’s why chemicals like dioxin, even in small amounts, are extremely dangerous.”** Unfortunately, the human body has no previous experience with these chemicals and there is no natural machinery in the body to break them down, much less eliminate them.

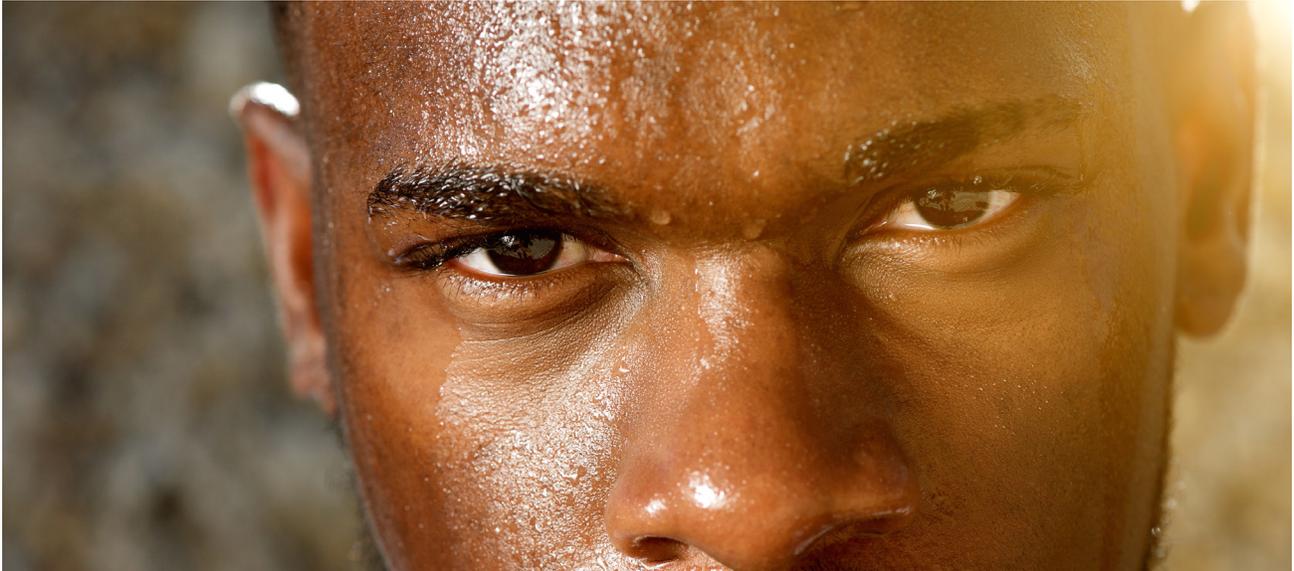
Human accumulation of such compounds as DDT, PCP, PCB, and dioxin, reflect biologically persistent chemicals which are partitioned in the body from water into lipids. Eventually the metabolizing of xenobiotics (chemicals foreign to the biological system) leads to the accumulation of the chemicals and/or their products in lipid deposits throughout the body, particularly in adipose tissue. The simple chemistry involved in this process can be illustrated by the fact that some chemicals readily dissolve in water, while others dissolve only in oil bases. Oil soluble chemicals, therefore, have a tendency to accumulate in body fatty tissue or lipids, which are also insoluble in water. There is no such thing as a fat “cell”...[rather] almost every cell has a fat component. The brain has a high fat content as does virtually every organ.

Directly or indirectly, toxic residues find their way into our air, food and water supplies. The net effect of this ecological overload is to alter the body’s balance or “homeostasis”. This interference with our natural biological tendencies to restore internal balance results in “disease” in one form or another. According to Professor Edward J. Calabrese of the University of Massachusetts, and author of *Pollutants and High Risk Groups*, “It is this homeostatic process which neutralizes the pollutant’s effect and returns the system to equilibrium.”

Marshall Mandell, MD, nationally renowned in the field of bio-ecologic medicine, wrote in a recent publication that the influx of chemicals in our society today “has resulted in a lowered threshold of resistance and subsequent inability to cope with the natural and unnatural environment due to altered body metabolism, enzyme dysfunction, nutritional deficiencies, and hormonal imbalances.” Health depends on the balance of both external and internal environmental forces.

## First, a recommendation.

As with any new therapy, workout, or significant dietary change, always seek the advice of your personal doctor or department medical director.



### “Sweating it out” works.

Sweating is the body’s safe and natural way to detoxify. It’s our “internal safety mechanism” and I believe far infrared saunas are designed for the deepest, most detoxifying sweat. Because an infrared sauna heats the body from the inside out, the detoxification process not only eliminates chemicals and other toxins from the body, but also helps ease muscle soreness, relax the mind, and flood oxygen to the areas of the body that need it most.

As a profession exposed to high-levels of toxins on a daily basis, first responders need to fight back against growing toxin-caused cancer rates. Every year, hundreds of fire fighters across the country are diagnosed with cancer. Researchers say that fire fighters are more at risk for the disease because crews are consistently exposed to contaminants and toxins from debris, smoke, and flames.

Homes and buildings aren’t made up of just wood anymore. They’re a combination of synthetic fibers and harsh carcinogens that our bodies were not designed to process or be burdened by. Dangerous and sometimes deadly toxins are released during fires, and the hotter the temperature, the more toxins are absorbed into the body.

Illnesses can be caused by the build-up of toxic chemicals, pathogen, and carcinogenic heavy metals (lead, mercury, nickel, cadmium) as well as alcohol, nicotine, sodium, sulfuric acid and cholesterol. Ridding the body of these toxins can help relieve symptoms, prevent illness, and increase overall health and vitality.

*“After a fire, the guys used to complain that they smelled of smoke for three to five days, sometimes a week, after a fire. Plus, they were taking those toxins/chemicals home and exposing their families. Now, if they go in the Infrared Sauna to recover, they sweat it out in 30 minutes”.*

### But it’s not just first responders, it’s our society as a whole.

The United States Center for Disease Control estimates that the root causes of more than 80% of all illnesses are found in personal environments or lifestyles. In other words, the world around you can make you sick. It’s in the air we breathe, and in the food we eat. There’s very little we can do to reduce exposure. We can, however, use sauna detoxification as an effective treatment.

As long as you maintain proper hydration and restore electrolytes, the more you safely sweat, the more toxins you’ll expel from your body.

**IMPORTANT NOTE:** The far infrared heat generated by Jacuzzi® Infrared Saunas produces sweat consisting of nearly 20% toxins versus only 3% in a traditional sauna. Any sauna treatment is better than none—but far infrared saunas actually do far more, far better than others.

## The results are in—and growing.

There is a wealth of literature documenting illnesses in humans from exposure to chemicals as described above. These illnesses include cancers of virtually every organ system of the body, as well as leukemia, liver disease, pulmonary damage, anemia and blood changes, nervous system disease, immune system damage, psychological damage, reproductive and fertility impairment, and kidney dysfunction. There are also many sub-clinical abnormalities that are suspected to result from presumed chemical exposure, and the list grows longer each year.

In response to the above facts, many health care practitioners have been recommending a vast array of decontamination / detoxification programs. Circulating toxins and toxic bowels need proper cleansing. The removal of these toxins is relatively well known and straight forward. But when toxins are deposited in fat storage sites throughout the body, this becomes much more complicated.

**The only way to remove toxins from body-wide fat storage sites is to mobilize the toxic fat, dissolving the toxins, and then removing them via the bloodstream / sweat process (see 'The Sweat Cycle Simplified' on page 18). The heat generated by a far infrared sauna activates the sweating process, and is an effective method of removing fat-stored toxins from the body.**

Over the years, I've learned a lot about the basics of detoxification. I've found that many of the Fire Chiefs, first responders, and even professionals I talk to don't know much about the subject. But many of them are interested in learning more, or correcting whatever misinformation they may have read.

Let's face it, there are a lot of bold claims and even potentially health damaging assertions being made in the marketplace. That's why I wanted to go on record with the facts in this booklet. The biggest fact is, fire departments from around the world have woken up to the many dangers fire fighters face *after* the fire. And that's where I'd really like to help.

## Water In / Toxins Out—the super power of the Sweat.

More and more scientific studies are verifying that one of the best ways to get rid of many kinds of toxins in your body is to **sweat them out**. Now, your liver, kidneys, small intestine, and other organs are a great line of defense against toxins, but there are other hazardous substances that are best purged through your skin. That's where sweating becomes invaluable.

Sweating is your body's natural way of purging itself to maintain a healthy state. The human body has millions of microscopic sweat glands that are infused with fluid brought there by the bloodstream. These glands empty that fluid to the skin's surface as a cooling mechanism when the body overheats, **flushing out any toxins and heavy metals carried there**.

Far infrared wavelengths decrease the size of water clusters in the body, energize them, and help them to combine with toxins. Reducing the size of the water clusters and causing them to vibrate enables them to move out of cells and body tissue, carrying with them toxins that were previously stuck inside. These toxins are then removed from the body by the urine and feces, breath and through the skin.

Decontamination / Detoxification is the single most common reason people I talk to want to buy an infrared sauna. My fire department, professional practitioner, and regular customers say the other benefits—the weight loss and pain relief, for example—are great, but there are other means of getting these things. Infrared saunas offer a uniquely efficient solution to detoxification that isn't easily achievable in any other way.

The problem with having toxins in your body is that they interact with enzymes and confuse cellular receptors, which inhibits normal cell function. When cells are confused, their electrical receptivity becomes out of sync, throwing the human body out of homeostasis.



## The following illnesses are thought to be connected to toxicity.

- Kidney Disfunction and Liver Disease
- Pulmonary Damage
- Cancer
- Anemia and changes in blood
- Reproductive and fertility impairment
- Cardiovascular damage

## Everyday benefits you can see and feel.

Now that we've talked about how far infrared saunas detoxify the body, and why decontamination is vital to your health, let's get down to the stuff that really matters in an everyday sense—how does detoxification improve your life? Well, for starters, you're at a much lower disease risk. Your immune system is made up of white blood cells that are thought to function less effectively if toxins are present.

**In addition to disease prevention, the following health benefits are also associated with a disciplined infrared sauna decontamination / detoxification program.**

### Weight Loss

Toxins can actually interfere with natural body processes that regulate weight gain and loss, like the function of the thyroid. To facilitate this even further, I like to stick to a diet of organic fruits and vegetables so that my digestive system stays healthy and removes toxins that way as well. Similar to a workout, endorphins and a calorie-burning sweat are released. In fact, you can burn of up to 600 calories per 30-minute session (results may vary).

### Enhanced Energy

For new users of infrared saunas, this is the benefit I hear the most about. Some users report a major energy increase after only one of two days of use. I remember feeling that exact same way when I started. Again, this energy increase is due to the release of toxins which affect the function of the thyroid—which is partially responsible for how energized we feel—and the function of enzymes, which are involved in a huge number of bodily processes.

### Improved Sleep

Another commonly reported benefit my customers rave about is better sleep. Some experts believe toxins in the body are strongly linked with insomnia. I certainly had a lot of trouble sleeping before I began using infrared saunas. Our sleep cycle is a complex interaction that involves so many different systems and substances in our body, including hormones, blood sugar, metabolism, and mineral balance. Throwing off something like your mineral balance by having too many heavy metals in your body can put your sleep cycle in turmoil.

### Clearer Skin

This one is obvious. If water is passing through your skin regularly, it's going to take some of the things that cause breakouts with it, like bacteria and dirt. It's also going to naturally moisturize your skin and prevent flakiness. Some of my more beauty-conscious clients also report fresher, glowing skin and reduced wrinkles and age lines for a younger appearance.

### Mental and Emotional Clarity

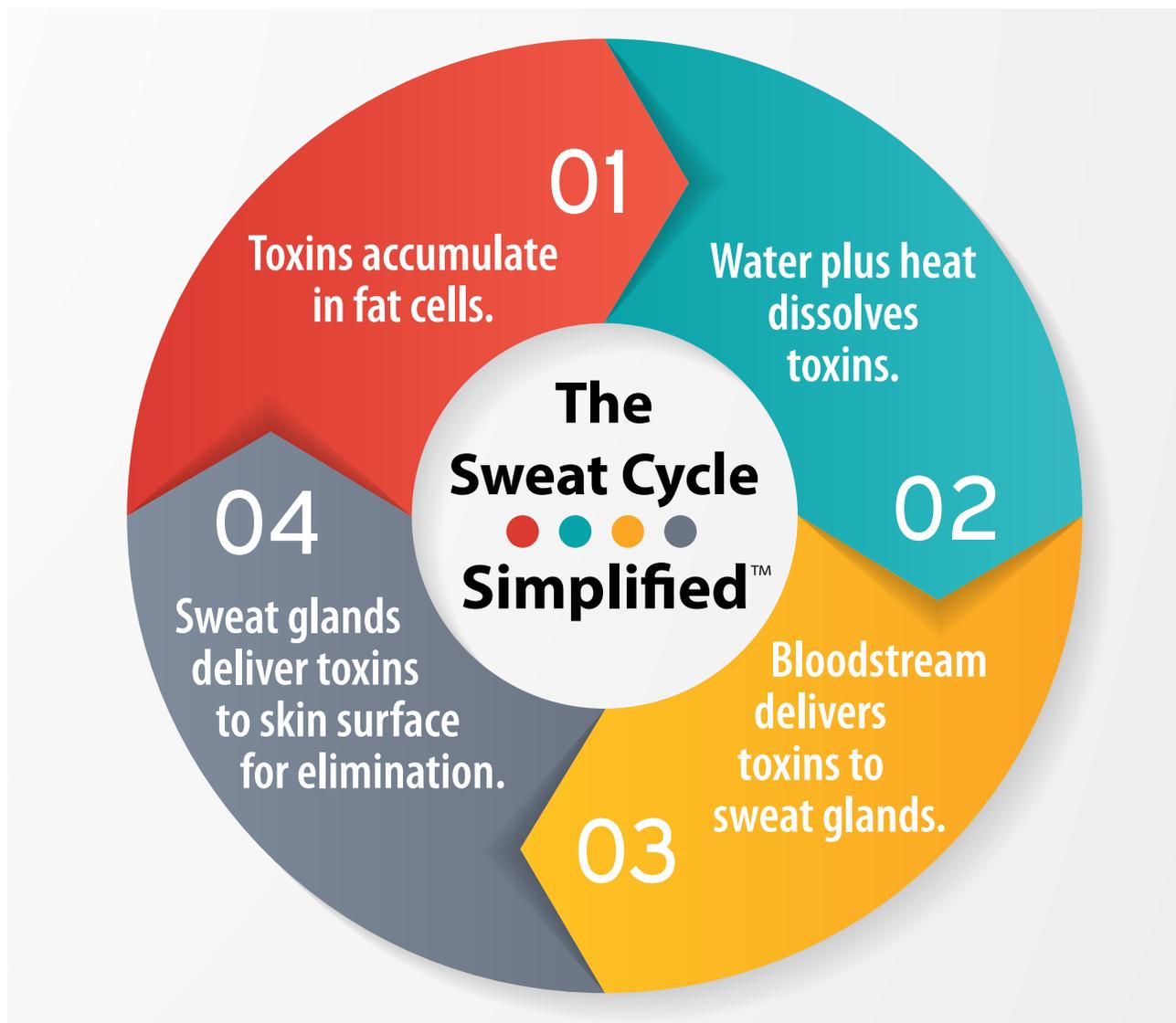
Many of these benefits are tied so closely together that it's impossible to say which one causes the other. For example, both sleep and energy levels have been shown to have an effect on how well we're able to think and focus. Detoxification helps me achieve a much clearer, sharper mind. The results also include better sleep, more energy, and overall improved health.

### Reduced Joint Pain, Headaches, and Digestive Disorder

Toxins are believed to cause inflammation, which is your body's response to stressful conditions, such as storing too many toxins. Inflammation can then cause conditions such as joint pain and arthritis, as well as digestive disorders and headaches. By purging the body of toxins, you can reduce inflammation and begin to alleviate other symptoms as well.

## The Sweat Cycle Simplified.

As mentioned above, one of the best ways to empty stored toxins in the fat cells is to sweat them out. Sweating is our body's natural way to not only regulate internal temperature, but to rid itself of noxious substances. Its millions of sweat glands are infused with fluid delivered via the bloodstream. At the right internal temperature, the glands in the skin empty that fluid (and the dissolve toxins it contains) to the surface as a cooling mechanism. The result: decontamination and detoxification.



## Decontamination Side Effects & Contraindications

When setting out to detoxify your body, it is also important to be aware of potential side effects. Dehydration, of course, is the #1 concern while sweating heavily, so make sure to drink ample amounts of water (see Hydration Chapter). Some people who are undergoing intense detoxification also report feeling ill. This is especially prevalent with users who have the highest toxin levels when they begin. In that case, losing the toxins in their body is similar to the withdrawal an addict might feel while detoxing from drugs or alcohol.

In other words, the body has come to rely on the stored toxins inside of it. If levels of useful minerals in the body are low, it will compensate by using heavy metals, for example, by substituting lead for calcium. Once these metals are released through sweating, the body must readjust. By maintaining a proper diet—including eating plenty of nutrient- and mineral-rich foods—and getting lots of sleep, unpleasant side effects can be reduced.

Tests can be done by your physician to determine how badly they may need to detox. Doctors can perform blood and urine tests to determine how much lead is in the body, which is a good indicator of whether someone is carrying additional heavy metals as well. **As with any new health-related activity, see your doctor to see if it's right for you.**

## The Importance of Hydration.



Firefighting is hard work. It's a physically demanding job that requires endurance and stamina. Hydration is not only important, it's critical, for optimal performance. Progressive dehydration can impair performance, mental capacity, and perception of effort. **With as little as a 1-2% shortage of body water, the ability to perform a high-intensity activity can be significantly impaired.**

### **Every human being is over 65% water.**

The human body is 66–70% water. Under normal circumstances, our body loses about 35–90 oz. of water a day through body waste, sweat and breathing. During normal athletic activity, the body can lose 8–16 oz. of water per hour. However, the extreme conditions of firefighting can demand more. Our bodies transport most of our nutrients in the blood. The blood is made up of 82% water. Our muscles are composed of 75% water, our brain 76% water, our lungs 90% and our bones contain 25% water. To say water is imperative for optimal health is an understatement.

### **Before, during, and after adding heat—add water.**

In all situations, proper hydration is a primary requirement for infrared sauna use. Drinking plenty of fluids is recommended before, during, and after each session. Never short-change yourself in this. **And don't forget electrolytes.**

The proper functioning of the immune system depends upon electrolyte balance. Heavy-duty sweat can drain the system of electrolytes, so have a solid game-plan to replenish them. Restoring lost trace electrolytes (calcium, magnesium, sodium and potassium) is very important after a sauna or workout. This will also normalize pH, further increase oxygen to the cells, reduce water retention problems, correct neuro-muscular imbalances, improve enzyme production, and increase overall energy levels. Electrolytes play an active role in helping to escort heavy metals out of the body—they are nature's own chelators.

Another great way to restore minerals is throw a pinch or two of Himalayan Salt (not iodized/table salt) in your water each day. Himalayan salt contains the minerals that are necessary for your health, including macrominerals (calcium, chloride, iron, magnesium, phosphorus, potassium and sodium) and trace minerals (boron, chromium, copper, fluoride, iodine, manganese, molybdenum, selenium and zinc). The macrominerals are needed in relative abundance. The recommended daily amount depends of your age, activity level and general health. **Calcium is the most common mineral in your body and is found in your bones and teeth, as well as playing a vital role in nerve and muscle health.**

Regular vitamin supplements are an inexpensive way to accomplish electrolyte replenishment. (See Vitamin/Mineral section for sources).

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# SWEAT THE BENEFITS

Infrared saunas have a lot of obvious benefits. But what about the ones that aren't immediately apparent to the eye? In this section, I'd like to share my personal experiences with infrared saunas, as well as the some common health benefits first responders may experience by adding them to a disciplined training and recovery regimen.



## **Your most important equipment? Your health.**

Every fire fighter knows the critical importance of maintaining equipment. And the first thing that happens after a call? Taking care to make sure that equipment is ready to go for the next one, able to perform with excellence whenever called upon to act. And what's true for trucks, hoses and gear is even more true for you.

By now, you've probably realized that infrared saunas can play a valuable role in decontaminating the body after a fire, but did you know they work just as well during the training too? By incorporating infrared saunas into your everyday regimen, you can make sure you're always ready to perform at your best. Speaking from personal experience, here's a quick overview of just some of the health benefits that infrared saunas can deliver.

### **Cardiovascular Health**

Regular use of an infrared sauna can improve cardiovascular health by lowering both systolic and diastolic blood pressure. Both are key factors in maintaining a healthy heart.

When the normally smooth, firm lining of the arteries becomes thickened and roughened by deposit of fat, fibrin, calcium, and cellular debris, it lessens the arteries ability to expand and contract, and slows the blood movement through narrowed channels. These conditions make it easier for blood clots to form. Infrared heat neutralizes blood toxicity and smooths the artery walls, capillaries and veins.

Sweating brought on by the heat from an infrared sauna causes your heart to gently pump at a faster rate. With more beats per minute, your blood vessels vasodilate, or widen, and more blood moves at a faster rate through the vessels and capillaries beneath the skin. This is an incredible boost to the circulation of blood throughout your body. Since circulation is so important to carry oxygen, infection-fighting cells, nutrients, and hormones around the body, this increased circulation can improve numerous health conditions. It can benefit heart health, blood pressure, cortisol levels, stress, and even cause pain relief.

### **Blood Pressure & Heart Health**

I had to take medication for high blood pressure before I began using infrared saunas, and I can tell you that suffering from high blood pressure is frightening. If left untreated, high blood pressure can cause heart failure, heart attacks, kidney disease, stroke, and vision loss.

On a more practical level, bad heart health and poor circulation can cause numbness or an irritating cold feeling in your toes and hands, as well as regular headaches. The benefits of improving your blood circulation and pressure include improved cell growth and organ function, which will have you feeling generally healthier and more energetic.

## Stress & Cortisol Levels

If you've had the heart-pounding experience of speaking in front of a large group of people, you know about fight or flight mode. Stress makes your body go into this mode and release the stress hormone cortisol. But it doesn't take public speaking for these hormones to hurt your body.

Prolonged higher levels of stress cause a constant release of cortisol and adrenaline into your body that is harmful, potentially damaging your immune system, causing you to retain more fat cells, and leaving you prone to depression and insomnia.



I know from experience that lack of sleep can damage your health in so many different ways. It decreases brain function and weakens your immune system. If you're serious about staying in shape, sleep is also the time when your body rebuilds the muscles you worked out on a given day, helping you recover and get stronger more quickly.

Infrared saunas remove your body from fight or flight mode. Inside an infrared sauna, the body relaxes, blood vessels vasodilate, and the user feels as if he or she has just finished a workout. For me, that feeling of relaxation generally lasts all day and into the night, helping me to sleep so much deeper. My own personal trick is to take a very hot steamy shower right after using my sauna in the evening, which helps to lull my body into some of the best sleep ever.

Relaxation is more important to health than most people realize. The American Institute of Stress estimates that 75 to 90% of all visits to primary care physicians are for stress-related problems. Long-term stress is the cause of countless physiological effects on the body, including increased blood pressure, weight gain, and weakening of the immune system.

The more stressed you are, the more cortisol your body produces. Cortisol is a "fight or flight" hormone made in the adrenal glands that raises heart rate and blood pressure and leads to the deposit of excess calories in the midsection. Scientific evidence shows that infrared sauna therapy helps the body maintain healthy levels of cortisol.



## Muscle/Joint Pain

One of the most compelling reasons to use an infrared sauna is the natural pain relief associated with infrared sauna therapy. You too can toss the pain pills and step into one of our healing infrared sanctuaries to relieve tension and relax muscles.

Infrared wavelengths provide deep penetrating heat therapy to joints, muscles and tissues by increasing blood circulation and speeding oxygen flow to areas of discomfort. In addition, it breaks up and reduces lactic acid deposits, accelerating connective tissue repair and allowing tight and worn-out muscles to relax.

By reducing soreness on nerve endings, our infrared heat reduces muscle spasms and helps the body heal itself naturally. Doctors often recommend infrared heat therapy to patients with arthritis, fibromyalgia and other chronic pain conditions. Infrared therapy is also widely used among athletes for relief from sports injuries.

Infrared saunas relieve pain by producing heat that penetrates joints, muscles, tissues, and nerve endings. They also stimulate the production of additional white blood cells, which alleviate inflammation. Many health experts have come to consider inflammation the underlying cause of many ailments and health conditions. The increased circulation caused by infrared saunas brings healthy, oxygenated blood to whatever area of the body is in need, reducing inflammation.



## Psoriasis & Other Skin Conditions

Psoriasis and many other skin disorders actually originate in the liver. When toxins are ingested, the liver does not have the ability to break down, metabolize, and excrete the toxins.

The toxins are sent to the skin for elimination via sweat. When the toxins hit the cell just below the skin, the body overproduces skin cells by a factor of 10,000. The toxins come out on the dead skin cells. By sweating regularly, the toxins are eliminated via the sweat and sebaceous glands as opposed to through the shedding of skin.

## Fatigue / Disease Prevention

Our everyday environments—like the smog and exhaust fumes I breathe in on my way to work—cause toxins to accumulate in the body that can combine with other disease-causing factors. On a daily basis, toxins can weaken your immune system and leave you more susceptible to illness, as well as fatigue.

If the cells in your body are not reproducing and functioning properly, all manner of routine tasks can become more difficult, leading to exhaustion that you would not otherwise suffer. When detoxified, these cells function better, leading to more energy and a better feeling of health.

## Stronger Immune System

A weakening of the immune system is one of the many physiological effects of long-term stress. A depressed immune system affects every aspect of your health and wellness. The 'healthy feverish' state an infrared sauna creates can boost your immune system activity, aiding in cell health, muscle recovery and overall immunity defense.

Infrared heat supercharges the immune system by promoting blood flow / oxygenation and increasing lymphatic drainage. This slows the multiplication of viruses and bacteria in the body, aiding in the prevention of illness and infection. Infrared heat can also stimulate white blood cell production and collagen growth by increasing energy at the cellular level.

## Weight Management

If you're looking to lose real weight, we can help. Relax in the comfort of our infrared saunas while you burn calories and shrink your waistline. A 40-minute infrared sauna session can burn up to 600 calories.

As the body works hard to cool itself and regulate core temperature, it expends a lot of energy, which is why so many calories are burned. In addition to boosting metabolism, body fat becomes water soluble at 110°F resulting in the release of fat molecules through the body's pores. Infrared Saunas are the ONLY natural and healthy way to burn calories without exercising.



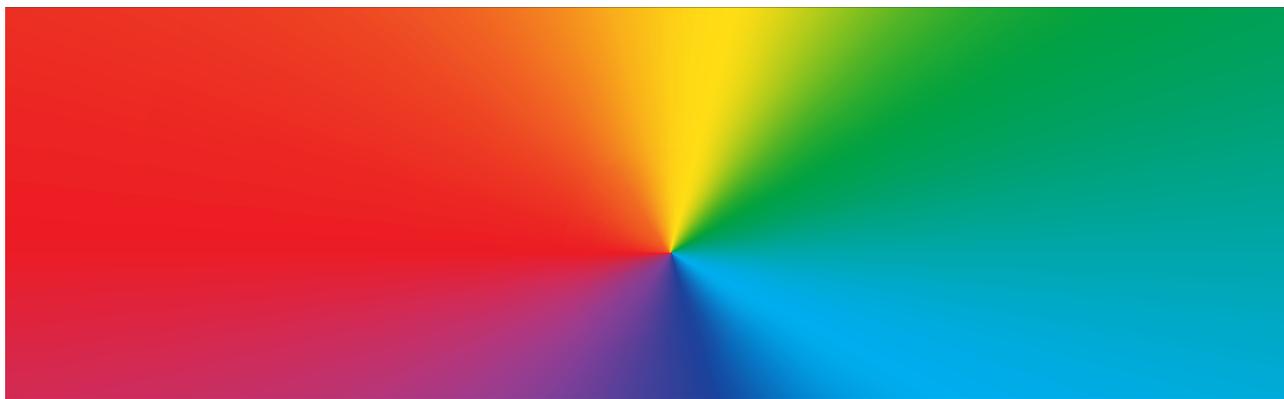
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# THE CALM AFTER THE STORM

Of the three primary phases of activity—**TRAIN**, **PERFORM**, and **RECOVER**—the final one all too frequently becomes an afterthought. *After* returning to the fire house. *After* decontaminating and maintaining the trucks and equipment. *After* taking care of everything else, it's time to **RECOVER**.

This section takes a look at an ancient, yet completely modern means of recovery through the use of colored light. Removing stress, ramping down the body's heightened post-call state, just taking a moment to breathe—*the combination of color and infrared saunas can make it happen.*

# What is Color Therapy?



Color Light therapy is a technique of restoring imbalance by means of applying color to the body. Its history is rooted as far back as the Mayan culture. Light Therapy has been valued throughout history as a remarkable source of healing. Today, the therapeutic applications of light and color are being investigated in major hospitals and research centers worldwide. Results indicate that full-spectrum, ultraviolet, colored, and laser light can have therapeutic value for a range of conditions from chronic pain and depression to immune disorders.

## “Its not what we see. It’s what we expect.”

Light Therapy is a technique of restoring imbalance using the full spectrum of visible light, also known as colors, to adjust body vibrations to frequencies, resulting in health and harmony. Its history is rooted as far back as the Mayan culture as a valuable, remarkable source of healing and **Jacuzzi® Infrared Saunas come equipped with Chromotherapy lights on the ceiling.**

Vitamin D deficiency is widely common, especially in the Midwest region. Ingesting store bought supplements daily is better than nothing, but there are other options you should consider. Our bodies need light energy to function properly and without it, we are simply depriving our systems of its vital chemical balance. When there is an imbalance in these colors within our bodies, we can experience serious mental or physical distress.

Our skin is the one place where we see the visible, detrimental effects of our body’s disparity. As we age, the elasticity in our skin decreases due to collagen loss and life’s toxins taking a toll. Alcohol, nicotine, stress, sleep deprivation, and food toxicity, all reason the skin over time, reveal the unpleasant truth of the aging process. Unwanted fine lines, wrinkles and discoloration tend to show up and we think the only solution must be expensive creams and/or procedures to reduce them. Rejuvenation and healing the skin to its natural glow with light therapy is a safe, natural process that can be much more effective.

*“I know I’m detoxifying my body because I feel so much better after using it.  
But I think my favorite part of the infrared sauna in our fire station  
is the fact I can relax and decompress for 30 minutes.*

***My body gets a break, my mind gets a break,  
and the light therapy has really helped positively enhance my mood”.***

*– Fire Fighter, Watertown (WI) Fire Department*

## Reported Benefits of Color Healing

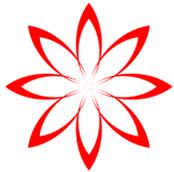
Reduce Stress/Anxiety	Combat Depression	Reduce Joint/Back Pain
Improve Sleep	Boost Immune System	Reduce Skin Conditions
Reduce Seasonal Affective Disorder (S.A.D.)	Decrease Inflammation	Improve Overall Mood
Accelerate Wound/Burn Healing	Improve Circulation	Reduce Arthritis

## Other Conditions Light Therapy May Address

Acne	Headaches	Hair loss	Dry skin
Sinus conditions	Scars and surgical wounds	Stretch marks	Sexual dysfunction
Poor circulation	Tendonitis	Arthritis	Fibromyalgia
Broken bones	Joint sprains	Muscle strains	Nerve damage

# The key colors of Chromotherapy.

Color is light split into distinct wavelengths that vibrate at different speeds and frequencies. Cultures all across the world recognize the power of light to affect general mood and overall health. While controversial, this long popular alternative medical therapy is beginning to find its way into the practices of more and more traditional healers as an effective mood- and health-enhancing therapy.



## Red

Red is called "The Great Energizer." It loosens, releases stiffness and constrictions. Activates the circulatory and nervous systems. Known as "The Great Energizer". Shown to boost energy and promote faster healing. Great for colds, sluggish or dormant conditions, such as pneumonia, arthritis, and/or anemia. Red links with and stimulates the base of the spine, causing adrenal glands to release adrenalin. This results in greater strength.



## Orange

Orange has a freeing action upon the mind, relieving repression. Thus, it is often referred to as "The Wisdom Ray." Warm, cheering, and non-constricting. Energizes and eliminates localized fat. Helps address asthma and bronchitis. Sparks greater mental activity and can induce an uplifting sense of cheerful emotions. Bring joy to your day and strengthen your appetite for life. Orange also aides in repairing kidneys, gallstones, menstrual cramps, and epilepsy.



## Yellow

Yellow helps awaken mental inspiration arousing higher mentality. Strengthens the body and acts on internal tissues. Reactivates and purifies the skin. Helps with indigestion and bodily distress. Shown to create feelings of optimism, good humor, and positivity. Also great for nervous or nerve-related conditions and ailments.



## Green

Green is recognized as the universal healing color. Help relax muscles, nerves, and thoughts. Acts as a nerve relaxant. One of the best light therapy hues for combating Seasonal Affective Disorder, as it can calm one down quickly and directly counteract the side effects of SAD. Cleanses and balances our energy, to give a feeling of renewal. When in doubt, go green.



## Blue

Blue is said to lubricates joints, and helps address infections, stress and nervous tension. Stimulates muscle and skin cells, nerves and the circulatory system. Minimizes the feelings of anxiety and depression, the mentally relaxing color. Can also be used for any type of ailments associated with speech, communication, throat. Blue light has also been shown to improve the look and health of one's skin.



## Violet

Violet is the last color we can see before light passes on to ultra-violet. Relaxes the nerves and lymphatic system. Addresses inflammation and urinary illness. Delivers a calming effect that can even help to overcome feelings of pain. Purple is a tranquil color that stimulates white blood cell production. Excellent remedy for neurosis, diseases of the scalp, sciatica, tumors, rheumatism, cerebral-spinal, concussion, meningitis.

Chromotherapy lights have a whole host of benefits.

From fire fighters to veterans to addicts to new moms—the combination of heat and light therapy is a powerful experience.

*Every Jacuzzi® Infrared Sauna is equipped with color LED lights to provide users with the most relaxing and effective experience possible.*

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# EAT BODY SMART

The old saying “You are what you eat” is true. But I’d add to that “and the quality of your performance is directly related to the quality of the food you eat.” **Food is power.** World-class athletes have known this for years; The better the quality and balance of the food you eat, the better you will perform when the starting gun goes off. For fire fighters, that gun comes in the form of tones through a loudspeaker. And when those tones come and the trucks roll, the quality of your diet is tested—and proven—in the only arena that counts.

# Nutrition – The Roadmap to Healthy Eating

The effect of quality nutrition on physical performance, appearance and health are undeniable. Simply stated, if you want to look, feel and perform like a race car, you'd better consume a diet rich in high-octane foods.

And if you choose to eat like a hog, expect to move like one. Nutrition is a critical piece of the training puzzle. What you eat is clearly going to either boost or hinder your physical development and performance.

FOOD provides the fuel, and the actual building blocks for our bodies. And in the profession of fighting fires and saving lives, you must understand that what you eat directly impacts how you feel, how you **TRAIN**, how you **PERFORM**, and how you **RECOVER**.



## Healthy Foods to Eat

### Whole Eggs

Eat whole eggs, not whites. Look for the words “free range”, “cage-free”, or “Omega-3” on cartons.

### Lean Meats

Chicken, turkey, beef, lean cuts of pork (tenderloin), and wild game (buffalo, venison, elk, rabbit, grouse, etc.)

### Fatty Fish

Salmon, sardines, and anchovies have been proven to increase mood during long shifts and stressful calls

### Legumes

An excellent source of fiber. Red beans, kidney beans, black beans, and chick peas are loaded with magnesium, iron, zinc, and potassium.

### Lentils

Low in calories and a good way to reduce your chance of heart disease.

### Tomatoes

Strengthen connective tissue and improve vision

### Spinach

Jam packed with Vitamin K, which promotes stronger bones. Also rich in amino acids, which are a natural chelating agent for removing heavy metals.

### Vegetables

Feel fuller longer and sustain energy with broccoli, cabbage, Brussels sprouts, and cauliflower.

### Avocados

Proven to help reduce cholesterol and burn fat

### Citrus Fruits

Grapefruit and oranges are packed with Vitamin C, which helps keep your immune system performing at 100%.

### Berries

Strawberries, cranberries, blueberries, blackberries, raspberries can help improve your memory.

### Sweet Potatoes

Complex carbs are a great way for stored energy. Which is a requirement to fight fires!

### Quinoa

High in protein and been shown to reduce migraines.

### Nuts

Almonds, cashews, pecans, walnuts, pistachios can all help reduce inflammation and a better mental state of mind.

### Extra-Virgin Olive Oil

High in antioxidants and the healthy mono-unsaturated fats, which can assist in lowering cholesterol.

## Foods to Avoid

Why is everything that tastes so good so bad for you? Because our bodies are evolutionarily predisposed to crave high density fat and carbohydrate food sources to help us through the lean times. Well, those lean times are mostly gone, but the cravings remain. If you want to perform at your best, minimize the following:

**Sugar** Get in the habit of reading labels. If it's on the first few ingredients list, chuck it, it's no good.

**Sugary drinks** (soda, energy drinks, fruit juice concentrates)

**Coffee** I know, I know, I love coffee too! However, overloading on it can be harsh on your adrenals, the caffeine-crash can negatively impact your performance, *and as a diuretic, it actually increases dehydration.* So, enjoy it in moderation, but swap it for a good ol' glass of H<sub>2</sub>O from time to time.

**White Bread**

**Refined vegetable oils** – soybean, corn, canola oil

**Pastries, cookies, and cakes**

**French fries and Potato Chips**

**Processed meats/cheese**

**Candy bars**

**Fast Food meals**

**Ice Cream** – One of the most delicious foods on the planet is, unfortunately, also one of the most unhealthy.

## Foods that Detoxify the Body



We live in a world where we are exposed to hundreds of toxins each day—in the form of pesticides, environmental chemicals, flame retardants, heavy metals, processed foods, stress and medications—to name a few. Certain people are more vulnerable to toxins due to their unique genetic makeup and biochemistry. Others, like first responder, are exposed to it on a regular basis and at off the charts toxic levels.

While exposure to toxins in your line of profession is inevitable, there are several things we can do to minimize those exposures and use food to our benefit. Certain nutrients and phytonutrients impact the body's ability to process toxins and lower the total body burden. My focus in this part of the book is using whole foods and nutrition to support your body's natural detoxification systems.

Detoxification refers to your body's ability to get rid of waste. If that is impaired, or if we are bombarded with too many toxins, we get sick.

The liver is central to metabolic detoxification. It works through a series of enzymes, via pathways referred to as Phase I and Phase II detoxification. This system is dependent on adequate nutrients, phytonutrients, antioxidants, and protein. The liver transforms chemicals, hormones and toxins into water-soluble metabolites that can then be excreted by the intestines, kidneys, and skin.

Healthy digestion is critical, since a healthy gut and regular bowel movements help excrete toxins. Leaky gut and constipation can make the problem worse. The kidneys also play a role, which is why good hydration with clean, filtered water is important. When using infrared saunas to sweat out the toxins, be sure to support your body first with good nutrition and adequate hydration.

## Don't forget protein!

While a plant heavy diet is important, high quality lean protein should not be neglected. Protein deficient diets impair detox pathways in the liver. While this is a highly general statement, and your department's policies may vary, fire fighters typically don't have much of a problem in this area. With a diet rich in meats, and the frequent use of protein powders pre- and post-training sessions, many get more than enough protein. But never assume that's the case for you. **Always consult your department's medical and nutrition specialists to make sure your diet delivers enough of this fundamental body 'building block.'**

# 10 Foods that Support Decontamination / Detoxification.

## Broccoli + other Cruciferous Vegetables

Broccoli, arugula, Brussels sprouts, cabbage, cauliflower, collards, kale, kohlrabi, bok choy, radish and turnips. These phytochemicals help metabolize and balance hormones, like estrogens. Cruciferous vegetables are researched in cancer prevention, especially hormone-sensitive or estrogen related cancers. They are great for metabolic detoxification and liver support. They also contain chlorophyll, which boosts detox capacity even more.

## Garlic - plus, chives, onions, scallions and shallots.

These contain sulfur compound. They possess important anti-inflammatory and antioxidant properties thought to help prevent cardiovascular disease, and cancer of the stomach and colon. Specifically, alliums help catalyze phase II detoxification in the liver which helps promote the elimination of toxins, including potential carcinogens.

## Parsley + Cilantro & Other Leafy Greens

Leafy greens include beet greens, bok choy, chard, cilantro, collard greens, endive, escarole, kale, mustard greens, and parsley. Leafy greens get their color from chlorophyll. Chlorophyll binds heavy metal toxins, including polycyclic aromatic hydrocarbons found in cigarette smoke and heterocyclic amines from charred meats. This is a fantastic reason to have a big green salad as a side with your grilled meat!

## Turmeric

Turmeric contains the phytochemical curcumin, which gives it a bright yellow color. Curcumin stimulates detoxification in the liver and increases glutathione. It is linked to studies in the prevention and treatment of diseases including colorectal cancers and Alzheimer's. *Side note: Black pepper boosts the absorption of curcumin.*

## Berries

Blackberries, blueberries, raspberries and strawberries are high in antioxidants that help fight free radical damage, and are thought to be anti-inflammatory. Berries have been linked to slow the growth of cancer cells and help the liver neutralize carcinogens.

## Lemon

Citrus fruit is a potent antioxidant that promotes liver detoxification and can play a potential role as an anti-cancer, especially for breast cancer prevention and treatment. Vitamin C, an antioxidant in lemons, also helps convert toxins into their water-soluble form so they can be eliminated. Try drinking a tall glass of filtered water with lemon first thing in the morning, or add a slice or two of lemon with the peel in to your Vitamix, Ninja or NutriBullet smoothie.

## Green Tea

The polyphenols in green tea are multiple flavanoids, the most significant component being epigallocatechin gallate (EGCG). They are strong antioxidants that help balance liver detoxification pathways. Green tea polyphenols may enhance the detoxification of carcinogens and have been linked with decreased risk of certain types of cancers in humans.

## Beets

Beets provide the highest plant source of betaine, which is anti-inflammatory. The high amount of fiber in beets also improves digestion and elimination.

## Flax Seeds

Flax seeds are the richest dietary source of lignans. These fiber-like compounds help detoxify harmful forms of estrogen. Lignan-rich foods have been associated with prevention of hormone-associated cancers, osteoporosis, and cardiovascular disease. Flaxseeds also provide anti-inflammatory omega-3 fatty acids, and their high fiber content supports good digestion. Grind whole, fresh flax seeds and sprinkle on salads or in smoothies.

## Artichokes

Artichokes are rich in liver-protective agents and stimulate the liver and gallbladder. They also have a mild diuretic effect on the kidneys, ensuring proper removal of toxins once the liver breaks them down. The very high fiber content also helps with elimination.

# Vitamins & Minerals— Recommended Supplements to Consider.

The following supplements are suggestions only. If you have any chronic health conditions or are taking any prescription medications, discuss adding any such supplements with your pharmacist, medical doctor, or department medical director.

You can learn more about any of the products listed here by clicking on the links below, or visiting [www.jenerate-wellness.com/shop](http://www.jenerate-wellness.com/shop)

## Multivitamins

For years, it was generally assumed that only certain groups of people (e.g., the sickly, those with a poor diet, and the elderly) needed to supplement their regular diet with a multivitamin. Now, more and more people and health practitioners are recognizing the real value of using such supplements to support health and wellness.

In the age of mass-produced, overly processed foods, many are worried they are not getting the full daily recommended amount of vitamins and minerals needed to sustain their health. Stress and environmental toxins can accelerate the depletion of these important substances from the body. The question for many is, of the many options available, which is right for their specific needs.

The question is a complex one. Where do you begin? What might you be lacking? How can one compare the quality of one vitamin against another?

While there is no single 'one size fits all' answer, I have discovered—and personally experienced—what I believe to be the most comprehensive source of nutritional vitamins. It's called [BodyHealth Complete+Detox](#).

## Greens Powder

Before I recommended this product, let's get one thing clear; you will still need to eat all your vegetables. ;) That said, [Greens Powder](#) can be used almost like a multivitamin. This power-packed powder delivers a TON of minerals, vitamins and antioxidants. Plus, it's very alkalizing, which is so important for keeping your body's acid / alkaline balance while strengthening your immune system. It's delicious apple flavor makes it the perfect addition to fruit smoothies.

## Amino Acids (Protein)

Most people know that protein is an essential part of any diet, and is a necessity for optimal health—and most assume they are getting enough protein via the food they eat daily. So why would anyone need an amino acid supplement?

The simple answer is that, yes, you do get good quality protein from foods such as eggs, meat, fish, and nuts. **But much of that food-based protein is not converted into body protein.** Much of it just passes through the body.

Many people are actually protein-deficient without realizing it. How can you tell? This condition can manifest itself as a nagging injury that just won't heal, or brittle bones, and constant colds. Not getting enough protein may cause depressed hormonal activity, a sub-optimal immune system, and raise the risk of serious diseases such as cancer.

So what's the solution? [BodyHealth's PerfectAmino](#) is an amino acid supplement that is 99% utilized by the body to make up for the protein you may be missing.

## Probiotics

Probiotics are the 'good' bacteria that live and work throughout the body's digestive tract. They help keep any 'bad' bacteria stay at optimal levels, support the digestive process, maintain the immune system's health and support hormone production in the body. Since 70% of your immune system is actually located in the gut, probiotics are a critical for supporting the body's immune response.

The medical use of antibiotics, and lifestyle factors such as excessive stress and poor diet often lead to less-than-optimal levels of 'good' bacteria. Those facing digestive issues such as excessive gas, bloating, or Irritable Bowel Syndrome are likely deficient in probiotics. If you seem to get every illness that's going around or just don't feel the level of vitality you would like, it may be you're lacking in probiotic.

The brand I use is Ortho Molecular-Ortho Biotic. Some other recommend brands to consider are Genestra Brand's HMF Intensive, Renew Life Critical Care, Life & Food Ultra Probiotic-50. **Look for brands that guarantee 50 billion cultures or more per capsule.**

## Vitamin D

This vitamin is crucial for so many different processes in the body. In fact, this vitamin functions more like a hormone than a vitamin. The body gets much of its Vitamin D from sunlight. Its UV rays react with the cholesterol in your skin to produce Vitamin D. Many people, especially those in the northern tier of U.S. states or don't get significant sun exposure, are likely deficient in this 'must have' vitamin.

How can you find out if you're deficient in Vitamin D? Schedule a visit with your personal physician for a simple test. It can quickly tell if you need supplementation. Ideally, your body should maintain a 50-70 ng/ml Vitamin D level year round. If you're not, work with your doctor to implement an effective supplementation strategy.

There are many high quality Vitamin D brands out there on the market, so it's hard to go wrong. But if you're in the market for a great source of Vitamin D, I highly recommend the liquid form commonly referred to as 'D-Drops' *over tablet- or capsule-forms for maximum effectiveness.*

## Intestinal Cleanse

Constipation is a challenge many people face. For some, a regular bowel movement can be a struggle without the use of a daily laxative. The condition can cause a sluggish, uncomfortable (and sometimes painful) 'backed up' feeling. Resorting to regular use of an over-the-counter laxative may provide temporary relief, but it can also have harsh effects on the body including bloating, cramping, and diarrhea. If waste remains in the body too long, it can become a breeding ground for 'bad' bacteria and a variety of illnesses. An Intestinal Cleanse product pushes undigested waste through the digestive system, clearing the way for good nutritional absorption. And a clean colon allows undigested waste to pass easily through the system.

Cleansing has the potential to aid weight loss too. Foods lacking fiber move through the digestion process slowly. This can create excess mucus that literally sticks to the intestinal wall, weighing it down with pounds of decaying fecal matter over time. Consequently, intestinal cleansing may result in significant weight loss and kickstart your metabolism. It can also help refocus your attention on making better food choices and whole-body wellness.

The act of intestinal cleansing is generally safe, but can have powerful results. As with all the supplements recommended here, seek consult with your personal doctor or departmental medical director to see if it's right for you.

One product I've personally used and heartily recommend is [BodyHealth's Intestinal Cleanse](#).

## Fish Oil

Fish oil is rich in essential fatty acids, especially Omega-3 fatty acids. These fats are called 'essential' because your body cannot make them, and can only get them through a well-founded diet. Ideally, your body needs to maintain a healthy ratio of Omega-3 and Omega-6 fatty acids. Many people over-consume Omega-6, as it's found in vegetable oils, and low-quality vegetable oils are found in most highly processed, packaged foods. Too much Omega-6 in the body may lead to inflammation, causing a whole host of health problems.

Supplementing the diet with fatty acids high in Omega-3 is crucial to bring the Omega-3 / Omega-6 ratio back into balance. It can also help lower cholesterol, balance hormones, improve joint health and function, reduce inflammation, improve mental cognition and memory, eye health, and help support clear, healthy skin.

I recommend, and personally use, [BodyHealth's Omega-3 Health](#) as part of my daily diet.

## B Vitamins

B vitamins are essential for many different processes in the body, especially those keeping your metabolism running smoothly, making sure you're getting the maximum energy from food, supporting brain health, and dealing with the effect of stress.

While there are many individual vitamins classified as 'B Vitamins,' with each performing a unique role in the body, the easiest way to ensure you're getting the right ones in the right amounts is to take a high quality 'B Complex' supplement.

I recommend Thorne Research's Stress B Complex, or Solgar's B Complex 100. Both products contain a good variety of the most essential B vitamins necessary for the optimal functioning of the body.

# Chlorella



Are you looking for an all-natural supplement that boosts your energy, supports fat loss and helps detox heavy metals like lead and mercury from your body?

If so, a freshwater algae called chlorella may be exactly what you need. Chlorella benefits the entire body by supporting healthy hormonal function, promoting cardiovascular health, helping to negate the effects of chemotherapy and radiation, lowering blood pressure and cholesterol, and aiding in the detoxification of our bodies. It is one of nature's best food sources for chlorophyll. This microalgae also provides a wide range of vitamins, minerals, and trace elements.

## Chlorella's rich green color comes from chlorophyll

Fire fighters are continually exposed to some of the worst toxins on our planet. However, all can benefit from chlorella. If you have mercury fillings in your teeth, have been vaccinated, eat fish regularly, have been exposed to radiation, you may have heavy metals lurking in your body. It is important for your overall health and wellness to be proactive in detoxing heavy metals and toxins.

One of chlorella's most significant health benefits is that it wraps itself around even stubborn toxins residing in our bodies, such as lead, cadmium, mercury and uranium, and keeps them from being reabsorbed. Regular consumption of chlorella can even help keep heavy metals from accumulating in our bodies' soft tissues and organs in the first place.

## Detoxifies Radiation and Chemotherapy

Radiation therapy and chemotherapy are the most common forms of cancer treatment today. Anyone who has gone through either of these treatments, or knows anyone who has, knows what a toll they take on the body. Chlorella's high levels of chlorophyll have been shown to protect the body against ultraviolet radiation treatments while removing radioactive particles from the body.

It is believed that all human bodies at some time develop cancer cells. Properly functioning immune systems have the ability to attack and destroy these cells, before they have the chance to take hold and create cancer. A recent medical study found that chlorella helps fight cancer in several ways.

First, when taken preemptively, it strengthens the immune system, so our bodies respond properly. Second, because it removes heavy metals and toxins from our body, we are less likely to get environmentally based cancers. Third, studies have shown that individuals once diagnosed with cancer, chlorella enhances the action of T cells helping to fight new abnormal cells.

And, as mentioned above, if cancer is diagnosed, and chemotherapy or radiation therapy is used, chlorella can help to fight the side effects and be used in addition to natural cancer treatments. The brand that I use and trust in my wellness center is NutriBiotic Broken Cell Wall Chlorella.

## Resources for more information

While I carry some of the recommended products here, another cost-effective place to shop online is [vitacost.com](http://vitacost.com). Many of my clients have recommended it for its great prices, easy-to-use website, and fast shipping.

I am also very impressed with the BodyHealth lines of quality supplements. If you can't find what you're looking for at [www.jenerate-wellness.com](http://www.jenerate-wellness.com), check out the [BodyHealth website by clicking here](#).

## One final thought.



### **My personal journey to health and wellness began when I was literally twice the physical size I am now.**

My weight affected every aspect of my life. My sense of self. Personal relationships. Even my dreams of what was personally possible were shaped by two things: my health and wellness.

### **To say this is personal to me is a vast understatement.**

As I began to learn more, and more importantly, *do more* to support my personal health and wellness, I discovered a deep desire to share what helped me with others. And that really was the genesis of my company, Jenerate Wellness.

While infrared sauna sessions were just a part of my holistic strategy, they were a big part. I became an enthusiastic evangelist for the technology and practice after seeing the results every time I looked in the mirror, woke up with more energy, and just felt better, stronger, and more capable all the way around.

I stumbled into supporting fire departments when I opened my wellness center—right next to a fire station. After hearing about the many challenges first responders face each day, I realized that I could really help them out by explaining the many benefits of infrared saunas and supplemental support in maintaining peak health and wellness for every member of their team. Later, I found an article about the 2005 Watertown, Wisconsin tire fire, just minutes down the road from my home today. The fire required the combined efforts of 108 fire departments and 25 agencies, and took over six days to put out. But the health effects of that event are still being felt.

I know, and want to share how infrared saunas can help fire departments with every phase of operations. As part of a comprehensive health and wellness strategy, I am certain that they can help you **TRAIN harder, PERFORM better,** and **RECOVER faster.** Where does this certainty come from? My personal experience.

This booklet was created to help you and your department on its journey toward creating superior health and wellness for its most important resource; the men and women who make up your team. Given their dedicated service, proven professionalism, and ongoing personal sacrifice, they deserve nothing less than the very best.

- Jen



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