SPLENDA OR SPLEN-DUD: THE TRUTH ABOUT THE LATEST AND GREATEST ARTIFICIAL SWEETENER

By

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The great philosopher Santayana once said that "He who forgets history is bound to repeat it." The truth of this profound insight has demonstrated itself dozens of times throughout history, and now this very same principle is coming true right before our very eyes; only this time it has to do with artificial sweeteners.

Both saccharin and aspartame followed virtually the same pattern when it comes to how they ultimately came to be approved by the FDA for public consumption. Both were

plagued with negative clinical data prior to the approval process; both were "tested" before they were approved primarily by the very companies who manufactured them (or by "independent" scientists who were hired by these same companies); both ultimately obtained FDA approval, despite the clear knowledge that they were "less than totally safe" for human consumption; and finally, both turned out to cause an entire litany of health problems in the millions of naïve individuals who consumed them (under the implicit assumption that they had been proven to be safe by the FDA). Indeed, neither one of these artificial sweeteners had ever been scientifically proven to be safe before they were approved, yet they received FDA approval anyway.

Incredibly, history is now repeating itself right before our very eyes. Only this time the trade name of this artificial sweetener is Splenda (or sucralose). You'd think that FDA regulators would have been able to learn from their past mistakes, but this is clearly *not* the case, because not only has Splenda followed the very same pattern as its two predecessors (virtually down to the letter), it has also managed to become America's most popular artificial sweetener in a remarkably short period of time. This is clearly due in large part to our country's obsession with weight loss, but regardless of the reason for its incredible growth, it is now a major ingredient in hundreds of processed foods and drinks.

The great promise of Splenda is that it is approximately 600 times sweeter than ordinary table sugar (or sucrose), and yet it has no calories to add to a person's weight gain. Indeed, Splenda is so intensely sweet that the manufacturer has to add "fillers" to reduce its overwhelming taste of "hyper-sweetness." Best of all, Splenda is also said to be stable during cooking, unlike aspartame, or Nutrasweet, which degrades into toxic wood alcohol, or methanol, along with formaldehyde (or embalming fluid) when it is subjected to the heat of cooking.

Unfortunately, Splenda is far from being an ideal artificial sweetener, as its proponents have repeatedly proclaimed it to be. To the contrary, Splenda belongs to a larger class of

chemical substances called “chlorinated hydrocarbons,” or more specifically “chlorocarbons,” which are well known for their widespread toxicity in humans.

The insecticides DDT and chlordane (both of which have been banned in the United States) also belong to this very same class of chemical substances, as does the carcinogenic dry cleaning fluid known as “perchloroethylene.” This fact alone gives us a very good reason for questioning the overall safety of Splenda in the human diet—*because chemicals that belong to a larger class of chemical substances all tend to share the very same chemical properties*.

The proper chemical nomenclature for sucralose is “trichlorogalactosucrose.” Structurally speaking, the closest substance to Splenda is an insecticide of the chlorinated hydrocarbon family. But who in their right mind would want to eat a “sweet” substance whose closest chemical relative is an insecticide of the chlorohydrocarbon family?. Perhaps this is even why insecticides are attracted to this poison so readily—because it is sweet to the taste!

One of the central issues of contention with the manufacturer is their claim that sucralose is not fat soluble and thus poses little long-term risks. Sucralose is a new molecule, hoever, and as such there has yet to be widespread research on its solubility.

However, we do know that sucralose is a chlorinated hydrocarbon, and, virtually *all* chlorinated hydrocarbons have some fat-soluble properties to them[1] In an article entitled “Spotlight on Chlorinated Hydrocarbons,” the distighished independent researcher Nicholas P. Cheremisinoff, Ph.D. wrote that “all chlorinated hydrocarbons, being fat soluble, can reside in body fat for a long time and get biomagnified through the food chain in the course of time.[2] This is one of the reasons why we are concerned about the potential toxicity of sucralose.

History of Sucralose

Sucralose was discovered in 1976 by researchers working at Tate & Lyle Ltd., a large British sugar refiner. In 1976, Tate & Lyle was conducting experiments, in collaboration with Queen Elizabeth College at the University of London, in an attempt to find ways of

using sucrose as a chemical intermediate. A foreign graduate student working on the project, by the name of Shashikant Phadnis, misunderstood his request to “test” a chlorinated sugar as a request for “tasting” it, which in turn led to the discovery that many chlorinated sugars are hundreds or thousands of times sweeter than sucrose.

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In 1991, Canada became the first nation to approve the use of sucralose. Then, in April of 1998, the U.S. Food and Drug Administration granted approval for sucralose to be used in a wide variety of food products. Diet RC cola was the first American product to contain sucralose. It was introduced in May of 1998.

Sucralose is not yet approved for use in most European countries, where it is still under review. In this sense, the Europeans evidently have a more competent testing and monitoring system for food additives than the Americans do.

The Sucralose Manufacturing Process

Sucralose is produced by chlorinating sugar (sucrose). This involves chemically changing the structure of the sugar molecule itself, by substituting three chlorine atoms for three hydroxyl groups in the overall sucrose molecule.

For those of you who are interested in the technical details behind the manufacture of sucralose, it is the substitution of three inherently toxic chlorine atoms for three hydroxyl groups that ultimately yields 1,6-dichloro-1,6-dideoxy-BETA-D-fructofuranosyl-4-chloro-4-deoxy-alpha-D-galactopyranoside. This is accomplished in a five-step process.

Prolonged storage, particularly at high temperatures and low pH, causes sucralose to break down into 4-chloro-4-deoxy-galactose (4CG) and 1,6-dichloro-1,6-dideoxyfructose (1,6 DCF).[3]

The artificial sweetener sucralose is representative of the "next generation" of high-intensity sugar substitutes. It is non-caloric in nature, and approximately 600 times sweeter than sucrose (ordinary white table sugar), although it can vary from 320 times to 1,000 times sweeter than sugar, depending on the food application. The white crystalline powder tastes like a lot like sugar, but is more intense in its sweetness.

Safety Issues

Few human studies of safety have actually been published on sucralose. One small study of diabetic patients using the chlorinated artificial sweetener showed a statistically significant increase in glycosylated hemoglobin (HgbA1c**)**, which is a marker of long-term blood glucose levels, and it is used to assess long-term glycemic control in diabetic patients. According to the FDA, "increases in glycosolation in hemoglobin imply lessening of control of diabetes."[4] This fact alone should give us pause, because so many of us are either already diabetic, or right on the verge of becoming so.

Research in animals has shown that sucralose can cause many problems in rats, mice, and rabbits, such as:

Shrunken thymus glands (up to 40% shrinkage)

Enlarged liver and kidneys

Atrophy of lymph follicles in the spleen and thymus

Increased cecal weight

Reduced growth rate

Decreased red blood cell count

Hyperplasia of the pelvis

Extension of the pregnancy period

Aborted pregnancy

Decreased fetal body weights and placental weights

Diarrhea

According to one source, concerning the significant reduction in size of the thymus gland, "the manufacturer claimed that the sucralose was unpleasant for the rodents to eat in large doses and that starvation caused the shrunken thymus glands."[5]

The Toxicologist Judith Bellin reviewed studies on rats starved under experimental conditions, and concluded that their growth rate could be reduced by as much as a third without the thymus losing a significant amount of weight (less than 7 percent). The changes were much more marked in rats that were fed sucralose. While the animals' growth rate was reduced by between 7 and 20 percent, their thymuses shrank by as much as 40 percent.[6]

A compound chemically related to sucrose, 6-chloro-deoxyglucose, is known to have anti-fertility and neurotoxic effects, although animal studies of sucralose have not shown these effects.[7]

According to the FDA's "Final Rule" report, "Sucralose was weakly mutagenic in a mouse lymphoma mutation assay." The FDA also reported many other tests as having "inconclusive" results. I don't know about you, but I don't want anyone I care about to be consuming a "weakly mutagenic" artificial sweetener.

Indeed, what is weakly mutagenic to one person could well be far more mutagenic to another person, because of the many profound physiological differences between individuals. For some unlucky souls, this "weak mutagenicity" could easily turn out to be the last straw to break the proverbial camel's back—leading to serious disease. It's simply not worth the risk to consume sucralose in this one area alone!

The remarkable paucity of studies on sucralose is itself an issue that is worthy of deeper inspection. As of November 18, 2004 there were 3001 studies published in the National Library of Medicine on saccharin, 774 on aspartame, 663 on cyclamates, but just a mere 76 on sucralose![8]

In terms of safety, it is not just the original substance (sucralose) that one needs to be concerned about. As the FDA notes, "Because sucralose may hydrolyze in some food products [resulting in unknown byproducts]...the resulting hydrolysis products may also

be ingested by the consumer." This comment certainly doesn't inspire confidence about the overall safety of sucralose.

The manufacturer of Splenda, McNeil Nutritionals, claims that "over 100 scientific studies on sucralose" have been conducted over a 20 year period. This information was gleaned from a report on Splenda's safety record, which the manufacturer readily sends out to anyone who submits an inquiry to www.Splenda.com.

There are many subtle problems that are hidden within this safety record itself. First and foremost, after they claim that Splenda is made by selectively substituting three chlorine atoms for three hydroxyl groups on the sugar molecule, they then surreptitiously claim that this form of chlorine is identical to the form of chlorine that is naturally present "in many of the foods and beverages that we eat and drink every day, ranging from lettuce, mushrooms, and table salt."[9]

The problem with the above quote is that the chemical form of chlorine that is utilized in sucralose is *not* the form of chlorine that is present in our foods or table salt. Any high school chemistry student will instantly recognize that the form of chlorine in table salt is the harmless "chloride" form (hence the technical term for table salt, which is sodium chloride). This is the ionically (or electrically) charged form of chlorine that is used by many bodily systems.

However, the form of chlorine that is used in sucralose is *not* the safe, ionic, "chloride" form; it is the potentially unsafe, mono-atomic (or single atom) form of chlorine that is unnaturally incorporated into the sucralose molecule itself. It is this mono-atomic form of chlorine that is almost always utilized whenever a chlorine atom is incorporated into the structure of any larger molecule.

On the other hand, when chlorine appears by itself in nature, it occurs in its natural diatomic (or two atom) state, which is a very toxic molecule known as Cl_2. This particular substance is *so* incredibly toxic that entire "emergency scenarios" are routinely enacted whenever there is a "chlorine leak," from a chemical plant or overturned truck, perhaps.

In other words, "chlorine" itself comes in three major forms: 1) the ionic, or negatively charged, "chloride" form, which is the "safe" form of chlorine that is used in ordinary table salt, 2) the diatomic, molecular form of chlorine, or Cl_2, which is poisonous and even deadly, whenever and wherever it is encountered, and 3) the mono-atomic "chlorine" atom, which is always found as part of a larger molecular structure.

Now, surely the manufacturer of Splenda knew all about these fine chemical distinctions between the safe and deadly forms of chlorine. But intead of using this knowledge to properly inform the public of Splenda's potential dangers, they clearly used it to mislead, and thereby to deceive, the public into a false sense of security. For if the chlorine in Splenda is no different that the ionic "chloride" form that is found in ordinary table salt, then we definitely wouldn't have anything to worry about. Incredibly, though, this is *not* the form of chlorine that is found in Splenda. They evidently just want us to *think* that it is, so that we'll think that their product is safe enough to buy and consume.

But this is false and misleading advertising, pure and simple. But it is actually more than that, because it is actually a *premeditated manipulation* of the public's mindset, so as to mislead us into believing that Splenda is as safe as ordinary table salt. The manufacturer is also taking advantage here of the public's general ignorance about inorganic chemistry in general, because it is the rare individual indeed who would ever know the difference between the various forms of chlorine that are known to exist.

So don't be fooled by this extremely subtle form of deception and manipulation. The manufacturer is clearly trying to trick the public into believing that sucralose is both safe and natural, through the tried and true "bait and switch" technique. First, they bait you into believing that the form of chlorine in sucralose is no different than the form of chlorine in ordinary table salt. Then, once you "buy" this assertion, their lie about the safety of this form of chlorine is then automatically switched to the truth of its *real* nature, as a potentially lethal toxic substance in its own right, because the chlorine in sucralose is most definitely *not* the chloride form that is found in table salt.

This "safety overview" of Splenda also states that sucralose is "suitable for people with diabetes…..It is not metabolized by the body and does not affect blood glucose levels."[10] Again, this is an untruth at best, for as we just saw a few pages earlier, sucralose has been demonstrated to cause a statistically significant increase in glycosylated hemoglobin (HgbA1c**)**, which is a marker of long-term blood glucose levels, and it is used to assess long-term glycemic control in diabetic patients. Moreover, according to the FDA, "increases in glycosolation in hemoglobin imply lessening of control of diabetes."[11] This misstatement of the known facts regarding the safety of sucralose in diabetics is highly suspect, to say the least, especially since it is designed to increase the consumer base for sucralose, even if it means providing misleading information to millions of diabetics, which itself could end up making them worse overall.

This brief safety report on Splenda has still more misleading information in it. The report itself appears to be designed to trick the public into believing that the 100-plus studies on the safety of Splenda have been "independent" in nature. The manufacturer's information sheet states that "the data from these comprehensive studies were independently evaluated by the FDA and international experts in a variety of scientific disciplines."[12] However, an independent *evaluation* of these original studies is *not* the same thing as an independent study itself,

So what we really have here is this: over 100 manufacturer-sponsored studies on the safety of sucralose, which were then "independently evaluated" by both the FDA and "international experts." We must keep in mind, though, that an "independent evaluation" of a company's own safety studies is *not* the same thing as conducting studies that are truly independent in and of themselves. This is highly relevant for our purposes in this book, because it means that both the FDA and the "international experts" who "independently" evaluated the manufacturer's safety studies were nevertheless 100 percent dependent on the data that the manufacturer provided them. And surely we wouldn't expect the manufacturer to provide them with negative data, would we?

So the manufacturer's claim that its product has been "independently evaluated" by both the FDA and a team of "international experts" turns out to be "wash" after all, since their intention of leading us to believe that independent studies were actually conducted on their product turns out to be nothing more than a game of semantics; it is a manipulation of words, and as such, of ideas.

Even worse is the manufacturer's claim that pregnant and breast-feeding women can consume sucralose with impunity.[13] Perhaps the manufacturer should reconsider their blanket statement of safety in light of the Japanese finding (through a truly independent study that we will examine in more detail later in this chapter) "that ingested sucralose *induces DNA damage in gastrointestinal orga*ns.[14] Now, if ingested sucralose induces DNA damage in gastrointestinal organs, shouldn't it be banned for use by anyone who is pregnant or breastfeeding? This is because a developing fetus or infant is especially vulnerable to the DNA-damaging effects of *any* substance, including sucralose. Who would want to take a chance on inducing DNA damage in the gastrointestinal tract of their precious infant? For that matter, who would want to consume *any* substance that has been shown to induce DNA damage anywhere in one's body?

Dr. Bowen has confirmed the gastrointestinal toxicity of sucralose, insofar as he has found that sucralose is taken up by the liver and is capable of causing toxic liver swelling. This would again be consistent with sucralose being significantly absorbed in the digestive tract.

Recent Research

A possible problem with caecal enlargement and renal mineralization has been seen in post approval animal research. Additional research has also recently demonstrated the following:

1) **Sucralose Breaks Down**

Despite the manufacturer's mis-statements, sucralose does indeed break down into small amounts of 1,6-dichlorofructose, a chemical that has not been adequately tested in humans.

2) **Lack of Independent, Long-Term Human Research**

Incredibly enough, there are none. The Manufacturer's alleged "hundreds of studies" (some of which show clear hazards) were clearly inadequate and do not demonstrate safety in long-term use.

3) **Chlorinated Pesticides**

The manufacturer claims that the chlorine added to sucralose is similar to the chlorine atom in the salt (NaCl) molecule. That is simply not the case, because for one thing, the chlorine in ordinary table salt is in the harmless ionic form of a "chloride," which isn't toxic at all. Sucralose may actually be more like ingesting tiny amounts of chlorinated pesticides, but we will never know for sure without long-term, independent human research.

4) **Conclusion**

While it is unlikely that sucralose is as toxic as aspartame, it is clear from the hazards seen in pre-approval research and from its chemical structure that years or decades of use may contribute to serious, chronic immunological and neurological disorders.

5) **Addendum**

1) Pre-approval test indicated potential toxicity of sucralose.

2) There are no "independent" controlled human studies on sucralose (which is eerily similar to the aspartame situation 15 years ago).

3) There are no long-term (12-24 months) human studies of sucralose's effects on human health.

There is no overall, centralized monitoring of the various health effects of sucralose. It took government agencies decades to agree that there were countless thousands of deaths from tobacco. Why? Simply because there had been no monitoring of its effects or epidemiological studies of its disease-inducing ability. Without such monitoring and studies, huge effects can easily go unnoticed.

It is clear then, that sucralose has no long history (e.g., decades) of safe use, nor is there any centralized independent monitoring of its health effects. There are also no long-

term, independent human studies, either, and this is without even looking at the pre-approval research which clearly showed the potential toxicity of sucralose.

One would hope that the "Precautionary Principle," now commonly used in Europe, would be a guiding force for people who are interested in maintaining their own health. Otherwise, we might just as well use any artificial, poorly tested chemical to sweeten our food with, even if it has shown a very clear potential for long term toxicity.

As far as the pre-approval research related to sucralose is concerned, you probably already know that such pre-approval research is rarely published in the public forum. It is only available from the FDA by filing a Freedom of Information Act request. However, you can see a very short summary regarding sucralose and shrunken thymus glands in the "New Scientist" (November 13, 1991, page 13).

It is very important that people who have any interest in their health stay aware from the highly toxic sweetener, aspartame and other dangerous sweeteners such as sucralose (Splenda).

Reported "Side" Effects of Splenda

In a provocative article by Rachel Naba[15] in *The Rising Firefly* magazine, there are many subtle, but disturbing, "side" effects of Splenda that are reported. Naba begins by noting that, "Splenda is an artificial sweetener that is gaining popularity but may be making people sick." To further illustrate her point, she cites the following anecdotal report by one potential victim:

> "It all began with purchasing a box of Splenda. The changes (in my opinion) were subtle. However, my family and friends noticed immediately. I became withdrawn and disinterested in my usual hobbies. Everything became a chore. I was tired during the day, but couldn't sleep at night either. I play the flute which requires a quick mental process and fingering skills to match, but suddenly I was struggling to play. Typing was difficult as well. During the past three weeks I noticed myself 'zoning out'. I'd become forgetful and moody. I thought perhaps it was the Splenda, because that was the only thing different in my daily habits… I was an emotional wreck. I cried and cried. I felt like I was losing my mind. My husband and son discussed my disturbing behavior while I was in the shower. Our son, Tim, recalled that the changes began with that little yellow box…" writes Debby Fazekas to Dr. Mercola, an advocate against sucralose use.[16]

Again, this anecdotal report is just one amongst a great many. The trick, it seems, is to be self-aware enough to be able to connect one's declining health and other disturbing symptoms to the use of Splenda, as opposed to other potential incitants. Ms. Debby Fazekas appears to have done just that, with the help of her family, in the above-quote example.

Rachel Naba goes on to conclude that:

> Mrs. Fazekas' experience with Splenda, an increasingly popular artificial sweetener, is one of many. As consciousness grows about the health problems associated with aspartame (NutraSweet and Equal), consumers have started to look for an alternative in alternative sweeteners. Many have turned to Splenda (sucralose), a sugar substitute that is used in many products. Some consumers have reported negative side effects of Splenda, but the manufacturers and FDA insist that it is safe. Looking deeper into the product's history, many consumers, doctors, and scientists are not so sure.[17]

Of course, both the manufacturer of Splenda and the FDA insist that Splenda is totally safe, despite the fact that they have inserted a known poison (chlorine) three separate times onto the natural sucrose molecule, in place of three otherwise harmless hydroxyl groups.

The Manufacturer's Claims Vs. Independent European and Japanese Studies

The central issue here is whether or not any sucralose is actually absorbed by the body. According to the manufacturer's own web site, only 15 percent of ingested Splenda is actually absorbed.18 Specifically, the manufacturer claims that:

> Absorption: Most ingested sucralose passes through the digestive system unchanged and without causing gastrointestinal side effects. Studies have shown that about 15% of ingested sucralose is passively absorbed from the gastrointestinal tract.

> Distribution: The small amount of sucralose that is absorbed is distributed to essentially all tissues. Studies show that there is no active transport of sucralose across the blood-brain barrier, across the placental barrier, or from the mammary gland into milk.

This is actually a *huge* admission on their part, because a 15 percent absorption rate is an exceptionally large amount, especially if you're dealing with a potential toxin. The company is evidently attempting to mitigate this very serious reality by claiming that it is only "passively absorbed from the gastrointestinal tract." In point of fact, however, it is totally ultimately irrelevant whether it is passively or actively absorbed (meaning that the body has to exert energy in order to absorb it). The only thing that truly matters is that at least 15 percent of ingested sucralose *is* absorbed into the body through *any* mechanism.

The company then tells us that this "small amount" of absorbed sucralose is distributed to essentially all tissues (which includes the brain). This again is yet another blockbuster admission on their part, which they again try to mitigate by saying that there is no "active transport of sucralose across the blood-brain barrier, across the placental barrier, or from the mammary gland into milk."[19] This admission itself seems to imply that there *must* be some type of *passive transport* of sucralose across the blood-brain barrier, the placental barrier, and from the mammary gland into milk; otherwise, how could it be possible for the relatively "small" amount of ingested sucralose to be distributed "to essentially all tissues," as the manufacturer itself claims? Indeed, we would expect a passive distribution of sucralose into these various areas of the body, since it could ride "piggy back" across these barriers with the essential fats that *can* cross these barriers, since as we have seen, sucralose is a fat-soluble compound, and *all* chlorinated hydrocarbons are fat-soluble to some degree.

This being the case, we can infer that the manufacturer is probably attempting to use the highly technical mechanisms of "active transport" versus "passive transport" as a classical "red herring," in order to distract us from the critical point that at least 15 percent of sucralose *is* absorbed through *some* type of biochemical mechanism, so that it can then be "distributed to essentially all tissues."

This is a potentially concerning issue given the fact that all chlorinated hydrocarbons are known to be hazardous to one's health. The European Journal *Acta Physiologica Scandinavica* further supports the fact that an "unexpected" amount of sucralose is actually absorbed from the gastrointestinal tract. The researchers were able to draw their highly significant conclusion by devising a novel "triple sugar" method of assessing the degree to which various sugars are actually absorbed by the colon. The critical part of the Abstract quoted below comes at the very end:

Aim: Conventional dual sugar tests of intestinal permeability assess only the stomach and small intestine. A novel triple sugar method of assessing colonic permeability has recently been described in animals. This utilizes the non-fermented sweetener sucralose, in addition to conventional sugars. It has been postulated that this test enables the simultaneous assessment of small-intestinal and colonic barrier function in humans. The aim of this study was to evaluate the triple sugar test using healthy volunteers and ileostomists.

Conclusions: Both sucralose and ^{51}Cr-EDTA underwent significant colonic absorption. A significant amount of lactulose also appeared to be absorbed in the colon. This unexpected finding requires further study.[20]

Once again we find that a "significant" amount of sucralose underwent colonic absorption, which the researchers admit was an "unexpected finding" to them. Perhaps it was unexpected because they too had been led to believe that virtually all of ingested sucralose is not absorbed by the body. We now know, however, both from the manufacturer and from an independent European study, that a significant amount of sucralose *is* actually absorbed by the body, through one mechanism or another. (The precise type of mechanism by which it is absorbed is thus totally irrelevant here.)

Another team of European researchers sought to evaluate this "unexpected finding" by further analyzing the Scandinavian study for accuracy.[21] After an exhaustive analysis, they also concluded that, "Both sucralose and 51Cr-EDTA underwent significant colonic absorption. A significant amount of lactulose also appeared to be absorbed in the colon.

This unexpected finding requires further study" (Copyright 2004 Scandinavian Physiological Society).

Yet another European study, this time in the U.K., adds significantly to the above conclusion by noting that approximately 20 to 30 percent of oral doses of sucralose were in fact absorbed in mice. This particular study utilized yet another clever means of assessing precisely how much sucralose is actually absorbed in mice. The researchers simply compared the amount of sucralose that was metabolized and excreted through two different methods of ingestion: intravenous vs. oral ingestion. When these two different methods were compared and contrasted, the researchers noted that, "20-30% of the oral doses was absorbed."[22]

This independent European study showed that up to *twice* the amount of sucralose (20 to 30 percent) is actually absorbed, relative to the obviously conservative claims of the manufacturer.

The same European researchers then sought to learn how much of ingested sucralose is actually absorbed in the dog. Using the same process of comparing intravenous and oral routes of sucralose administration, the researchers found that anywhere between 18 percent and a whopping 48% of the oral dose of sucralose was actually absorbed.[23]

Incredibly, these innovative European researchers found that as they progressed up the phylogenetic chain from the mouse to the dog, the amount of absorbed sucralose increased significantly, from 20 to 30 percent in the mouse to 18 to 48 percent in the dog!

More importantly, a team of Japanese researchers discovered that ingested sucralose also induces DNA damage in gastrointestinal organs. Specifically, they noted that, "four sweeteners (sodium cyclamate, saccharin, sodium saccharin, and *sucralose*) actually induced *DNA damage in gastrointestinal organs*. Based on these results, we believe that more extensive assessment of food additives in current use is warranted.[24]

This conclusion is *shocking*, to say the least. After all, these highly innovative Japanese researchers discovered that orally ingested sucralose actually induces "DNA damage in gastrointestinal organs." This is clearly *not* a desirable thing, by anybody's

standard; that is, unless you want to increase your odds for contracting some form of gastrointestinal cancer! No wonder Japan never approved the use of aspartame for their citizens. Their policy is to reject any food additive that shows clear signs of being unsafe in humans. This is why the above researchers concluded that "more extensive assessment of food additives in current use is warranted."[25]

Rachel Naba further takes to task the manufacturer's claim that the relatively small amount of ingested sucralose is nevertheless safe for the body. For while it may be true that the majority of sucralose passes through the body unchanged in the urine and feces,

The reality is that up to 40% of the ingested sucralose is metabolized. Both the metabolites and unchanged absorbed sucralose are excreted in the urine. Meanwhile, absorbed sucralose has been found to concentrate in the liver, kidney and GI tract. The Sucralose Toxicity Information Center also reports that sucralose breaks down into small amounts of 1,6-dichlorofructose, which is a chemical that has not been tested adequately in humans.

Because sucralose is a chlorinated molecule, when it is metabolized, some of the chlorine and other substances in Splenda (including arsenic, or rat poison) is taken up by the system. Alarming? Yes, when we realize that chlorinated molecules serve as the basis for pesticides like DDT and accumulate in body fat.[26]

Even within industry and FDA studies, then, both the metabolization and absorption of Splenda is clearly demonstrated, so why, according to Naba, are the manufacturers claiming that it is not? What else are they claiming that is not true? What are they hiding?[27]

Despite the manufacturer's claims to the contrary, then, sucralose *is* significantly absorbed and metabolized by the human body. According to the FDA's "Final Rule" report, *11% to 27% of sucralose is absorbed* in humans, and the rest is excreted unchanged in the feces. According to the Japanese Food Sanitation Council, *as much as 40% of ingested sucralose is absorbed*.

Plasma sucralose has been reported to have a half-life of anywhere from 2 to 5 hours in most studies, although the half-life in rabbits was found to be much longer at about 36 hours.

We can conclude from the above studies that anywhere between 20% to 48% of absorbed sucralose is actually absorbed and metabolized in the human body.

But the most shocking discovery of them all, as we have seen, is the Japanese finding that ingested sucralose *induces DNA damage in gastrointestinal organs*.[28] But is it worth it to induce DNA damage in our gastrointestinal organs, just to be able to consume a zero calorie artificial sweetener? It's about time that we adopted the prudence of the Japanese when it comes to not approving artificial sweeteners that are known to be toxic.

Moreover, since virtually all chlorinated hydrocarbons are fat-soluble to some degree, it is not surprising that the absorbed sucralose has been found to concentrate in the liver, kidney, and gastrointestinal tract. According to "The Sucralose Toxicity Information Center," sucralose is broken down "into small amounts of 1,6-dichlorofructose, a chemical that has not been adequately tested in humans."

Research conducted with rats, mice and rabbits has shown that sucralose consumption can cause shrinking of the thymus gland (up to 40 percent shrinkage), enlargement of the liver and kidneys, atrophy of lymph follicles in the spleen and thymus, increased cecal weight, reduced bodily growth rate, decreased red blood cell count, hyperplasia of the pelvis, extension of gestational periods in pregnancy, decreased fetal body weights and placental weights, and diarrhea. According to the FDA's "Final Rule" report on sucralose, it was considered to be "weakly mutagenic in a mouse lymphoma mutation assay."[29]

According to Jim Earles, of the Weston A. Price Foundation, the reason for this litany of side effects may be related to the fact that:

> Sucralose is a chlorinated molecule. Chlorinated molecules, which are used as the basis for pesticides such as DDT, tend to accumulate in body tissues. Johnson & Johnson maintains that sucralose passes through the digestive system without any absorption or metabolization, but the FDA's own research has shown that 11 to 27 percent of sucralose is absorbed in humans, while the rest is excreted unchanged in the feces. Tests performed by the Japanese Food Sanitation Council have found that as much as 40 percent of ingested sucralose is absorbed. To

> further dispute the manufacturer's claims, research indicates that about 20 to 30 percent of the absorbed sucralose is metabolized. Both the metabolites and unchanged absorbed sucralose are excreted in urine, but some absorbed sucralose has been found to concentrate in the liver, kidney and gastrointestinal tract.[30]

Chemical Hypersensitization from Aspartame to Sucralose

Aspartame is a chemical hypersensitization product, and as such, it is known to interact with other toxins and unsafe sweeteners, as well as vaccinations. Accordingly, those individuals who are finally are getting off of aspartame, but who are moving over to Splenda, are reported to be reacting terribly, due precisely to this chemical hypersensitization process. Many physicians (such as Dr. Betty Martini) are getting first-hand reports of all sorts of disturbing reactions, ranging from painful rashes to outright seizures.

Unfortunately, both Coca-Cola and Pepsi are reformulating their diet drinks to exclude aspartame, but to *include* both Splenda and acesulfame potassium, which caused cancer and leukemia in original studies.[31]

Long-Term Human Studies on Splenda

Incredibly, there are none! Indeed, according to the Medical Letter on Drugs & Therapeutics, "*Its long-term safety is unknown*." According to the "Sucralose Toxicity Information Center," the Manufacturer's "hundreds of studies" (some of which show obvious hazards) were clearly inadequate and do not demonstrate safety in long-term use."

Similarity to Chlorinated Pesticides

According to *Consumers Research Magazine*, "Some concern was raised about sucralose being a chlorinated molecule. Some chlorinated molecules serve as the basis for pesticides such as D.D.T., and accumulate in body fat. However, Johnson & Johnson emphasized that sucralose passes through the body unabsorbed."

Of course, this assertion that sucralose is totally at odds with the manufacturer's own admission that at least 15 percent of sucralose *is* absorbed after all.[32]

There is a wide range of reported "side effects" of sucralose in "susceptible" individuals, in addition to the ones noted above. These potential side effects include many of the same side effects that have been associated with chlorinated pesticides, again because substances that belong to the same general chemical family tend to share similar properties and physiological side effects. These side effects include organ damage, as we have seen, along with reproductive "changes" and a wide range of neurological "deficits." What else would one naturally expect from a substance whose closest chemical relative is a chlorinated hydrocarbon biocide like DDT? This fact alone should make anyone think twice before consuming such a potentially dangerous substance.

A similar principle is known to apply to the toxicity of ordinary tap water. This is because chlorine—which is a known carcinogen in its own right—is added to our public water supply in order to sterilize it. However, there are many other hydrocarbons that are also naturally found in tap water. The significance of this fact is substantial, because it means that the chlorine that is added to tap water is able to chemically react with the various hydrocarbons that are also in tap water. The end result of these unpredictable chemical reactions is the production of several different types of "chlorinated hydrocarbons." This is one of the many reasons why ordinary tap water is toxic and carcinogenic in and of itself, and should therefore be avoided by anyone who prizes their health.

There is a remarkable—and indeed conspicuous—paucity of negative technical information on sucralose in the published scientific literature. Even more conspicuous is the fact that the vast majority of studies that have ever been performed on sucralose have been funded and carried out by the sole manufacturer of sucralose. Hence, there are just a few independent studies of sucralose, the vast majority of which were carried out overseas, which adds further suspicion to the true safety record of sucralose.

As if this weren't enough, the FDA has also failed to demonstrate, in a legitimate, scientific manner, the general safety of Splenda when it is consumed by human beings. This is certainly contrary to the unspoken expectations of the vast majority of Americans, who automatically tend to assume that any given artificial sweetener *has* to have already been proven to be reasonably safe *before* it is ever allowed into the marketplace.

Of course, this is the way that it is supposed to be. The various regulatory agencies of the Federal Government are *supposed* to regulate what the American public is actually exposed to and what it isn't. Unfortunately, this has turned out to be a very naïve expectation, because artificial sweeteners such as Splenda have *not* been proven to be safe, nor are they actively being monitored for their public safety once they've actually reached the marketplace.

There are several reasons for this sad state of affairs, chief among them being greed and the desire to maximize corporate profits at all cost. But this shouldn't by itself be a sufficient reason for allowing potentially toxic substances to reach the marketplace. After all, we should naturally expect "for profit" companies to do everything they possibly can to maximize profits. This is the very nature of capitalism. It is also the reason why we must have various regulatory agencies at the Federal level—so that the public can be protected from the many potential dangers of corporate greed.

Sadly, though, when billion of dollars compete with government regulators, the Big Money tends to win out in the end. We can see ample evidence of this today at the American FDA, where the all-important Office of Drug Safety hasn't even had a Director for well over a year (as of the end of 2004).

The end result of this pitiful state of affairs is that a frightening proportion of toxic substances have already been allowed into the marketplace, including sucralose, where they are then "tested" on an entire nation of unsuspecting "guinea pigs."

Contaminants and Environmental Concerns

There is also the question of Splenda's overall degree of purity to consider. While the manufacturer claims that its product is 98 percent pure, we are compelled to ask

ourselves what is in the other 2 percent? For as Naba has documented, "Studies have shown that the final Splenda product contains small amounts of heavy metals (like lead), arsenic (rat poison), methanol, triphenilphosphine oxide, chlorinated disaccharides and chlorinated monosaccharide.[33] Naba also questions the unknown ecological impact that excreted sucralose will ultimately have on the environment itself (knowing that other chlorinated hydrocarbons, like DDT, have persisted throughout the entire global environment for decades after it was banned):

> Much of the sucralose that is consumed is excreted from the body in the feces and urine. While sucralose is being flushed down toilets and drains, there have not been studies conducted to see what effect this has on the environment and ecosystem. Does it remain stable or does it react with other substances? Is it….safe for the environment? How will it affect fish and other water life? What will it do to our soil, and how will it affect our food? Sucralose is no longer sugar—it is man-made, and any time we introduce a new substance into nature, consequences are not far behind. Unfortunately, studies have not been done to ensure that our environment will remain safe and stable after the introduction of sucralose, and we are not likely to know any effects that it has on our world for many years to come, if at all.[34]

Although manufacturing guidelines do specify limits on these substances there is no guarantee that such limits will always be met.

Despite the fact that a portion of sucralose is metabolized into several chemicals of highly questionable safety, a majority of sucralose that is actually consumed is excreted unchanged in the feces and urine. While that may be good for the person using the product, it may not be so great for the environment.

Although sucralose is being flushed down toilets wherever sucralose is approved for sale, what happens next is simply a matter for speculation. We know of no studies showing the environmental impact of introducing substantial amounts of the chlorinated hydrocarbon *sucralose* back into the environment in the form of raw sewage.

Indeed, based purely upon its chemical status as a horrendous chlorinated hydrocarbon (i.e., in the same chemical class as DDT), researcher Dr. James Bowen has claimed that sucralose, like DDT, "isn't even legal in the environment and could hardly be conceived

of as being any less damaging to fertility than aspartame. No calorie reduced sweetener is safe. They wouldn't work if they didn't potently and extremely rapidly stimulate, excite, and derange the specialized neurons in the tongue to make them report high levels of sugar when none is there. Anything like this is dangerous to you."[35]

Going one step further, we can ask whether or not sucralose remains stable, or whether it reacts with other substances, so as to form new compounds. If it does, these new compounds are presently unknown, and are therefore of questionable safety at best.

Is sucralose itself or any of the chemicals that are produced when sucralose is broken down through normal environmental pathways safe when it is introduced into the environment for the first time in history? How will it affect aquatic life, such as fish, as well as other animals throughout the biosphere? Indeed, judging solely from the fact that DDT, another chlorinated hydrocarbon, persisted in the environment unchanged to the point that it was actually found in Penguins and other organisms at the South Pole! Who is to say that sucralose, which is just as much a chlorinated hydrocarbon as DDT, will accomplish the same end result, or worse? This was one of the reasons why DDT was ultimately banned in the U.S. (although we continue to export it to other countries for financial reasons)—because a great many species were headed for extinction because of the destructive effects of DDT on their reproductive apparatus.

Of course, we probably won't know the answers to these questions for many years to come, if at all. One of the main reasons for this is that *the FDA did not require an Environmental Impact Statement for sucralose*, because in their words, "the action will not have a significant impact on the human environment." How can they possibly know this? This is taking a huge, unnecessary risk on the continued viability of our delicate ecosystem, and it very well could contribute to our already poisoned, cancer-causing world. Do we really want to hand down such a poisoned, toxic planet to our progeny, who don't deserve to pay the consequences for the destructive actions that we are taking today?

One study did in fact find that sucralose is metabolized by microorganisms in both the water and soil.[36] However, the ecological impact of this new chemical entity introduced into the environment is unknown. However, given the delicate, perfectly-balanced nature of the larger biosphere itself, it is highly unlikely that a toxic and unnatural substance like sucralose will have anything *but* a negative effect on the larger ecosystem of our delicate planet. Why? Because you simply can't improve on perfection; and moreover, a perfectly balanced, "just right Goldilocks ecosystem" simply has no "wiggle room" for adding any toxic substances to it at all.[37] Surely this is a principle we can understand and relate to. But most importantly, we need to keep it in mind whenever we contemplate introducing large quantities of a toxic chemical into the environment without any compunction.

Is There Any Consumer Benefit?

According to Consumers' Research Magazine, sucralose provides some substantial benefits for the corporations that are making and using it, but not for consumers. They state:

But are such foods truly beneficial and desirable? Diabetics, weight watchers, and the general public might make better food choices by selecting basic, rather than highly processed foods; for example, apples, rather than turnovers; or plain, rather than sweetened, dairy foods.

They note that non-caloric artificial sweeteners are not replacing, but rather supplementing, conventional sweeteners. They note that as of 1990, Americans were consuming an average of 20 pounds (using the sweetness of sugar as a criterion) of artificial sweeteners a year. Moreover, as the consumption of sugar-substitutes has risen, so too has the consumption of sugar itself.

But this alleged fact is something of a distortion, because the latest findings are that artificially sweetened foods and drinks are increasingly taking market share *away* from their normally sweetened counterparts. According to the Seattle Times, diet and calorie-conscious consumers are increasingly driving up the sales of virtually all artificially sweetened products in their perpetual quest to consume less total calories.[38]

As John Sicher, editor of *Beverage Digest* has pointed out, “There's no such thing as a no-calorie hamburger. There’s no such thing as a no-calorie doughnut….But the soft-drink industry already has these huge, powerful brands of diet drinks.”[39] Indeed, market analysts believe that the soft drink industry is the best situated one of them all to capitalize on the current no-calorie, diet craze that has been sweeping the nation.

So the “cola wars” are no longer “Coke” versus “Pepsi” *per se*. It is, to the contrary, normally sweetened sodas by any brand, versus their artificially sweetened counterparts. Remarkably, artificially sweetened sodas have gained a full 6 percent in the two years between 2002 and 2004, over against their normally sweetened “cousins,” and this very fact has had tremendous ramifications in the highly competitive 64 billion dollar per year soft drink industry. Indeed, the gains that are being made by artificially sweetened soft drinks have been so substantial that industry analysts predict that they may eventually take the lead in this stupendously lucrative market.[40]

Does Sucralose Help with Weight Loss?

According to Consumers' Research Magazine "There is no clear-cut evidence that sugar substitutes are useful in weight reduction. On the contrary, there is some evidence that these substances may stimulate appetite." This only makes sense, because the culinary pursuit of sweetness can quickly turn into a bona fide sugar addiction. And since tolerance to any given “intensity” of sweetness is rapidly formed (as in any chemical addition), an ever increasing amount of sweetness must be obtained to produced the same subjective sense of “sweet satisfaction.”

This is why the use of sucralose could ultimately end up making a person *more* fat, and not less, by stimulating the appetite and creating an unconscious sugar addiction in the naïve and unsuspecting victim.

Where is Sucralose to be Found?

In the United States, the FDA has granted approval for the use of sucralose in 15 food and beverage categories: These include

Baked goods and baking mixes

Chewing gum

Confections and frostings

Fats and oils (salad dressings)

Fruit and water ices

Jams and jellies

Processed fruits and fruit juices

Sweet sauces, toppings and syrups

Beverages and beverage bases

Coffee and tea

Dairy product analogs

Frozen dairy desserts and mixes

Gelatins, puddings and fillings

Milk products

Sugar substitutes

I. Carbonated Beverages

Boylan Bottling Company
Boylan's Diet Birch Beer Root Beer

Briar's USA, Inc.
BRIAR'S Diet Birch Beer Root Beer

CC Beverages (U.S.) Corp.
Diet Clearly Canadian® Blackberry Cherry Tré Lemone

Classic Selection
(7-Eleven Private Label)
Sugar Free Sparkling Water Black Cherry Key Lime Kiwi Strawberry Peach Tangerine-Lime Tropical White Grape

Crystal Clear
Sugar Free Sparkling Water Lemon Lime Mixed Berry Peach Raspberry

D'Best Dispensers
D'Best Diet Cola (fountain)

Family Dollar (Private Label)
Diet Cola

Kroger (Private Label) Light Cranberry Grape Juice Cocktail LightCranberry Juice Cocktail

Monarch Beverage, Inc. Monarch Diet Cola (fountain)

Napa Valley Juice Company
Renée Sparkling Beverages Bold Black Cherry Juicy Strawberry Luscious Peach Wild Raspberry

Reach for the Star Beverage Co.
Diet Star Cola Grape Lemon Lime Orange Root Beer

Rivella (USA) Inc. Diet Rivella

Snapple Beverage Group
Diet Rite® Cola
Diet RC® Cola Kiwi Strawberry Red Raspberry Tangerine White Grape

Stewart's Beverages, Inc.
Sparkling Diet Black Raspberry Orchard Peach Ruby Red Vanilla Cream Wild Cherry

Urban Juice and Soda Co.
Slim Jones™ Diet Soda Black Cherry Cream Fufu Berry Lime Cola Orange

Upstate Beverages, Inc.
Upstate Diet Cola (fountain)

How Does Sucralose Compare With Other Artificial Sweeteners?

Its promoters cite several benefits of sucralose over other sweeteners, such as:

Unlike saccharin, sucralose leaves no bitter aftertaste.

Unlike other artificial sweeteners, it remains stable at high temperatures.

Unlike sugar, it does not raise blood glucose levels

As a comparison to sucralose's 600-fold sweetness increase over sugar, consider the other artificial sweeteners on the market:

Saccharin (Sweet-and -Low) - 300 to 500 times sweeter

Aspartame (NutraSweet and Equal) - 150 to 200 times sweeter

Acesulfame K (Sunette) - 200 times sweeter.

A Huge Market

A 1998 report in Chemical Week states that the high-intensity sweetener market is taking in about **$1.5-billion per year**. About 70%-80% of that market is made up of soft drink sweeteners, of which aspartame has a near monopoly. They note that although sucralose is 50% sweeter than aspartame, it will be difficult to persuade many soft drink producers to give up NutraSweet (aspartame) since it is widely accepted by consumers.

Is There Any Post-Approval Monitoring of Splenda's Safety?

Evidently not! With no established system for monitoring and tracking post-approval adverse effects, how can it ever be established whether the large-scale and long-term consumption of sucralose is actually safe for consumers? This sorry state of affairs is simply unacceptable when the FDA uses billions of our tax dollars, ostensibly to protect us. It's time they put all that money to good *public* use.

Toxicity Information Relating to Sucralose

Here are some of the specific biochemical reasons why you will want to give serious consideration to consuming sucralose.

Much of the concern is related to the fact that the manufacturer of sucralose claims that it is derived from sugar that contains the monosaccharide sucrose.

Look at the chemical name of sucralose: 1,6-Dichloro-1,6-dideoxy-beta-D-fructofuranosyl-4-chloro-4-deoxy-alpha-D-galactopyranoside. One would have expected that a product "made form sugar" as they say on the box, would be called: 1,6-Dichloro-1,6-dideoxy-beta-D-fructofuranosyl-4-chloro-4-deoxy-alpha-D-glucopyranoside.

Why does this molecule contain a chlorinated galactose moiety rather than a chlorinated glucose moiety if it is made from sucrose? When the molecule is hydrolyzed, chlorinated monosaccharides are produced from the product. Could it be that sucrose is not used due to the toxicity of chlorinated glucose?

Should You Avoid Sucralose?

“The Holistic Web Page cites the following reasons to avoid sucralose:

Pre-approval tests indicated the potential toxicity of sucralose.

There are no “independent” controlled human studies on sucralose (similar to the same scenario15 years ago with aspartame).

There are no long-term (12-24 months) human studies of sucralose's effects.

There is no long-term monitoring of health effects. It took government agencies decades to agree that there were countless thousands of deaths from tobacco. Why? Simply because there had been no monitoring or epidemiological studies of the known toxicity of tobacco. Without such monitoring and studies, huge effects can easily go unnoticed.

Are There Any Warning Labels on Sucralose Products?

No. The regulatory agencies and scientific review bodies that have endorsed the safety of sucralose have not required any warning information to be placed on the labels of products sweetened with sucralose.

"The Sucralose Toxicity Information Center" concludes that:

> While it is unlikely that sucralose is as toxic as the poisoning people are experiencing from Monsanto's aspartame, it is clear from the hazards seen in pre-approval research and from its chemical structure that years or decades of use may contribute to serious chronic immunological or neurological disorders.[41]

The Consumer's Research Magazine concludes that:

> As Americans continue to choose ever-increasing amounts of such foods and beverages, sweeteners may soar to higher consumption levels. The long-range health effects from such escalation need careful evaluation. Do additional approved sweetening agents truly contribute to good health? Do they really meet special dietary needs? Or, do they merely further encourage poor dietary choices?[42]

Don't let these large companies fool you. There is no magic alternative to sugar when it comes to sweeteners. You simply can not have your cake and eat it too when it comes to this area. It is far too early to tell, as not enough people have consumed this product to observe large numbers of adverse effects.

However, Dr. Mercola has had a number of patients in his highly innovative Wellness Center, who have experienced severe migraines and even seizures possibly from consuming this product.

Our advice? Avoid sucralose at all cost, because protecting your health from unsafe substances is clearly *worth it* in the end. Dr. Mercola is fond of telling his patients that "if something tastes sweet you probably should spit it out as it is not likely to be good for you." This of course, is a humorous exaggeration, but for most people who struggle with chronic illness, it is likely to be a helpful guide nonetheless.

The "Total Load" Concept

One of the principal reasons for avoiding sucralose has to do with one of the simplest concepts in modern environmental medicine. It is the "total load" concept that Dallas-based physician Dr. William J. Rea has championed over the last few decades. According to Dr. Rea, the human body can be compared to an empty barrel that has varying amounts of water in it. The amount of water that it contains is directly proportional to the amount of toxic substances that the body is exposed to on a regular basis. When the barrel fills up and overflows, the ability of the body to detoxify these "xenobiotic" (or foreign) substances is naturally exceeded. The end result of this toxic "overflow" is a wide range of disease symptoms, including headaches, vasculitis, chemical hypersensitivities, and even organ failure.

The biochemical rationale for this is straightforward and to the point. The human body—or more specifically, the human liver—possesses a limited ability to detoxify xenobiotic substances. When this detoxifying capacity is naturally exceeded, say through some type of toxic exposure, one's inner "barrel" automatically overflows, because one's liver simply cannot detoxify all the poisons that one has accidentally ingested. The end result of this highly unpleasant state of affairs involves a wide range of unpleasant, and even painful, disease symptoms. The specific symptoms that any given person will naturally experience, of course, depends on their biochemical individuality and their idiosyncratic vulnerabilities.

Once a person's "barrel" overflows, he or she then becomes overly sensitive to virtually any toxic or semi-toxic substance, again because the liver's detoxifying ability has already been exceeded. This accounts for the "spreading" phenomenon that is so familiar to those unfortunate individuals who have been poisoned by one toxic substance or another. It simply refers to the fact that one's sensitivities have suddenly "spread" to other substances that never used to be bothersome before.

Most of us are probably far closer to having a "full barrel" than we ever completely realize. This is because one can be very close to "overflow status" without having any

significant symptoms. Nevertheless, this means that one is almost totally "full" of toxic chemical substances (many of which are probably carcinogenic). Many of these chemical toxins are fat soluble, so they lodge themselves in our fat cells and continue to keep our inner "barrel" near overflow status for most of our lives. In this case, it only takes one significant toxic exposure to cause one's inner barrel to overflow. This phenomenon could easily be caused by simply eating in a restaurant that has been sprayed with pesticides.

It is Dr. Rea's highly useful "barrel concept" that explains why otherwise healthy people seem to "come down" with cancer out of nowhere. In reality, their inner barrels were probably very close to overflow status for years, during which time the chemical poisons that were being stored within them were quietly causing enough genetic damage to eventually lead to cancer "out of nowhere."

This is one of the primary reasons why a person should avoid sucralose at all cost. For insofar as it is a member of the highly toxic "chlorinated hydrocarbon" family of chemicals, it undoubtedly requires a great deal of "liver attention" before it can be sufficiently detoxified. However, in keeping with Dr. Rea's barrel concept of disease, each additional chemical that we add to our bodies naturally increases the amount of water in our inner "barrels." It stands to reason, then, that for untold numbers of people, ingesting sucralose could well represent the final "straw" that will break the proverbial "camel's back," insofar as it adds to the overall toxic load that the liver has to detoxify. For many people, this is all they need to experience an overflow of their inner barrel of toxicity, which in turn could easily lead to cancer somewhere down the road. In the meantime, it will almost certainly add to the overall lack of optimal health and well-being that we are all in search of.

In this case, the lack of calories in sucralose simply isn't worth the risk of consuming it. This is the primary reason why Splenda is anything *but* splendid for the vast majority of people.

Sucralose Detoxification

Since sucralose is a chlorinated hydrocarbon, which itself is absorbed to varying degrees by in the human body, and since it is also fat-soluble by its very nature (as a chlorinated hydrocarbon), this means that the regular consumption of sucralose is inevitably going to cause a buildup of sucralose in your own fat cells, particularly in the fat cells that comprise the vast majority of your brain. Moreover, once they become lodged in your fat cells, they will tend to stay there, where they will, in turn, cause all types of bizarre and inexplicable side effects, both mental and physical. But instead of doing our best to rid ourselves of these toxic residues in our fat cells, we continue to add to them by continuing to consume sucralose in one form or another.

Hopefully this chapter will have convinced you to avoid sucralose like the plague; that is, if you care at all about your own health. If you make this choice, you are then going to need to detoxify yourself from this poison that is hiding in your fat cells, because you don't want them to stay in there until they cause greater damage (like cancer) one day in the future.

There are many ways to detoxify oneself of this poison, ranging from internal detoxification (from the ingestion of detoxifying substances like selenium, glutathione, and alpha lipoic acid), to externally based detoxification, which usually takes place in a *far infrared sauna*. Far infrared saunas help the body's fat cells to "spit out" the poisons that are inside them, when are then excreted from the body through the body's largest excretory organ—the skin!

Unfortunately, this is a long and arduous process that typically involves getting significantly worse before one gets better. This is because as these toxins are actively being released from your fat cells (by the infrared radiation energy that is essentially "vibrating" them out of your fat cells themselves), they are suddenly released into the bloodstream before they can be excreted through the skin, urine, or feces. But this process of "getting worse before one gets better" is actually a good thing, because it shows that one's inner storehouse of poisons is finally getting eliminated from the body

once and for all. The end result of all this difficult detoxification work is that you will eventually feel better than you've ever felt in your entire life—provided you've made the commitment to yourself to never consume another artificial sweetener again, most particularly sucralose.

[1] "Ecotoxicology and Environmental Analytics: Organic Pollutants," http://www.uni-hohenheim.de/fangmeier/M7101/M7101-Lecture9.pdf.

[2] Nicholas P. Cheremisinoff, Ph.D., "Spotlight on Chlorinated Hydrocarbons," N and P Limited, Washington, D.C., to be published *Pollution Engineering Magazine* ©; article can be viewed in its entirety at the following web site: www.chemchannels.com/chemchannel/Archives/Chlorinatedhydrocarbons.asp.

[3] The Chemical Abstracts Service Registry number (CAS Reg. No.) for sucralose, in case you're interested, is 56038-13-2.

[4] Jim Earles, "Sugar-Free Blues: Everything You Wanted to Know About Artificial Sweeteners," posted at the following web site: http://www.westonaprice.org/modernfood/sugarfree_blues.html.

[5] The Sucralose Toxicity Information Center.

[6] New Scientist, November 23, 1991, pg 13.

[7] Taken from Mercola.com.

[8] This number (76) was found by conducting an exhaustive Medline search.

[9] "Splenda: Frequently Asked Questions," manufacturer handout, which can be ordered for free at www.Splenda.com.

[10] Ibid.

[11] Jim Earles, "Sugar-Free Blues: Everything You Wanted to Know About Artificial Sweeteners," posted at the following web site: http://www.westonaprice.org/modernfood/sugarfree_blues.html.

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[13] Ibid.

[14] Sasaki YF, Kawaguchi S, Kamaya A, Ohshita M, Kabasawa K, Iwama K, Taniguchi K, Tsuda S., "The comet assay with 8 mouse organs: results with 39 currently used food additives," Laboratory of Genotoxicity, Faculty of Chemical and Biological Engineering, Hachinohe National College of Technology, Tamonoki Uwanotai 16-1, Aomori 039-1192, Japan, Mutat Res. 2002 Aug 26;519(1-2):103-19.

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[16] Ibid.

[17] Ibid.

[18] Taken from the www.Splenda.com web site.

[19] Ibid.

[20] A. D. G. Anderson, P. K. Jain, S. Fleming, P. Poon, C. J. Mitchell and J. MacFie, "Evaluation of a triple sugar test of colonic permeability in humans," Acta Physiologica Scandinavica, Vol. 182, Issue 2, p. 171, October, 2004.

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[25] Ibid.

[26] Rachel Naba, "The Bitter Truth About Sweeteners: Splenda's Health Consequences," taken from the following web site: http://theearthcenter.com/ff44splenda.html

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[28] Sasaki YF, Kawaguchi S, Kamaya A, Ohshita M, Kabasawa K, Iwama K, Taniguchi K, Tsuda S., "The comet assay with 8 mouse organs: results with 39 currently used food additives," Laboratory of Genotoxicity, Faculty of Chemical and Biological Engineering, Hachinohe National College of Technology, Tamonoki Uwanotai 16-1, Aomori 039-1192, Japan, Mutat Res. 2002 Aug 26;519(1-2):103-19.

[29] Jim Earles, "Sugar-Free Blues: Everything You Wanted to Know About Artificial Sweteners," posted at the following web site: http://www.westonaprice.org/modernfood/sugarfree_blues.html.

[30] Ibid.

[31] Taken from personal correspondence with Dr. Barbara Martini, director of "Mission Possible."

[32] Taken from www.Spenda.com.

[33] Rachel Naba, "The Bitter Truth About Sweeteners: Splenda's Health Consequences," *The Rising Firefly*, Issue 44; (July 8 - September 10, 2003). http://theearthcenter.com/ff44splenda.html.

[34] Ibid.

[35] Dr. James Bowen, "Sperm Warfare: Aspartame vs Fire Ant, The waning energies of human sperm," from a letter published on the web at: http://www.dorway.com/spermwar.txt.

[36] Labare, 94.

[37] For more on the universal applicability of this simple, yet profound, "Goldilocks Principle of Optimal Balance," see Michael A. Corey's book *The God Hypothesis* (Lanham, MD: Rowman and Littlefield, 2002).

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