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## 1999 Technical Bulletins

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## WASTE WATER DISPOSAL

### WHERE SHOULD MY WASTEWATER GO?

Talk about a touchy issue. For many years, magazines, convention agendas, and newsletters have been filled with articles and speeches about the proper handling and disposal of industrial wastewater produced during the carpet cleaning process. What can this author say that hasn't been said before? Well, the truth of the matter is that most articles about wastewater management simply come down to "war stories" of large fines being levied against some poor carpet cleaner and how if you'll buy a waste pumping system all of your problems will be solved. We wish it were that simple.

### WHY DO WE DISPOSE OF WASTE WATER PROPERLY?

How big is the problem? According to Dr. Michael Berry, when he was with the U.S. Environmental Protection Agency, wastewater produced by carpet cleaners represents less than 1/2 of 1% of the total wastewater problem. However, carpet cleaners are visible and easy to identify, especially when they open up their dump valve on main street. However large or small our contributions are to the total problem, our wastewater must be handled and disposed of properly. Why, you ask? To quote Wilford Brimley of Quaker Oats commercial fame, "Because it's the right thing to do." The truth is that most companies will never be stopped or fined for illegal wastewater disposal. The motivation for change has to come from inside. We must want to take better care of the planet that we live on because it is the right thing to do.

So how do we dispose of our wastewater? Where should our wastewater go? Let's start with the absolute. Never, ever, ever, ever dispose of your wastewater directly into the storm sewer system. In most places, it's illegal. In all places, it is unnecessary and not wise. Now that we've gotten that out of the way, we can move on to the more complex issues. If we can't dump into the street and/or storm sewer, then where can we dump? Well, a proper understanding of that issue must first come from understanding what potential problems exist within the wastewater we are trying to dispose of.

Most cleaners simply think about what hazardous chemicals are contained in their wastewater. But there is more to it than that. In 1993, the city of Calgary, Alberta did an analysis of a professional cleaner's wastewater. You know what they were primarily concerned about? It wasn't any chemicals that were in the water—it was the fuzz, lint, and carpet fibers in the water. They were concerned that the large particle and fiber material would clog up the pumps of the sewage treatment system. They were making an excellent point. Fortunately, there are many easy ways for the professional cleaner to help solve this particular problem. Each professional cleaning company must take responsibility for doing some filtering of their wastewater. We're not talking about a \$20,000 trailer mounted filtration system that is available in the high pressure washing industry. We're talking about simple filter devices such as lint socks, filtration screens, and even old panty hose. Quite simply, wastewater should be filtered in the waste tank by the use of a lint sock or filtering screen. But it should also be filtered by running it through filtration screens within the vacuum recovery line. This is usually accomplished by the use of a clear viewing filter or a metal filter. If you do both of those things, you will have pretty much solved the large particle, lint, fuzz, and carpet fiber problem.

### DO OUR CLEANING CHEMICALS PRODUCE HAZARDOUS WASTE?

Now, let's focus on the chemical content of the wastewater itself. Are there hazardous chemicals in carpet cleaning wastewater? For our purposes, the wastewater that results from the cleaning process can be classified two ways. Industrial wastewater contains levels of no hazardous ingredients at part per million levels above government standards. Hazardous wastewater contains measurable hazardous ingredients that are measured at standards higher than government regulation allows. We can only

determine what the cleaner used to clean the carpet with. In our industry, most pre-conditioners and carpet rinsing detergents do not contain any hazardous ingredients. Therefore, as long as no hazardous chemicals pre-existed in the carpet that was cleaned, then the resulting wastewater is not hazardous. This discussion excludes the issue of butyl solvents. Some pre-conditioners contain butyl solvents such as Butyl Cellusolve. Butyl Cellusolve is considered to be a hazardous ingredient. However, it is also a commonly used solvent in many products. If it is contained in a carpet cleaning pre-conditioner in a quantity of 10% or less, its parts per million after use in a 100 gallon waste tank, classifies it as industrial waste rather than hazardous waste. However, the conscientious professional cleaner should be aware that many inexpensive carpet cleaning chemicals contain higher levels of butyl solvents; that's how they make them cheap. Also, when evaluating the resulting wastewater from a carpet cleaning chemical, it is important to keep in mind that just because a particular chemical has an ingredient listed as hazardous on its Material Safety Data Sheet, does not automatically mean the resulting wastewater would be classified as hazardous. Once the chemical is mixed and diluted in use application, and ends up as a minute percentage in a one hundred gallon waste tank, its parts per million classifies it as industrial waste. In general, carpet cleaning chemical usage results in industrial rather than hazardous wastewater. We will discuss proper disposal principles for industrial wastewater in a few moments.

However, there are a few chemicals that some carpet cleaners can or have used that might result in hazardous wastewater. Generally, these are chemicals used in spotting application. Rust removers that contain percentages of hydrofluoric or phosphoric acid greater than two percent could result in hazardous wastewater if they were used in large enough quantities. However, since the cleaner has usually used alkaline cleaning agents, these agents counteract and balance the acid ingredients resulting in industrial wastewater with a safe pH in the 7 - 9 range. One general rule that can apply here is to test the pH of your wastewater. In most places, for them to be classified as industrial wastewater, the pH should fall between 5 and 9. Take note if you are using highly alkaline cleaning agents (pH of 12 or higher); you may need to pH balance your resulting wastewater. Another category of spotting agents that we must consider are non-volatile solvent spotters. These usually contain amyl acetate and can be identified by their "banana oil" fragrance. As long as most of these chemicals are used in quantities of 8 ounces or less per 1000 square feet of carpet cleaned, they pose no danger to making the resulting cleaning wastewater hazardous. However, it is still good practice to use them in a post-spotting application and rinse them with volatile solvent spotters.

In general, it's a good practice that spotting agents only be used after basic cleaning procedures would not remove a spot or stain. A good general rule to keep yourself safe is to only use spotting chemicals bought from reputable chemical manufacturers that specialize in fabric cleaning.

## **SO WHAT ARE OUR DISPOSAL OPTIONS?**

So now that we have determined that a large majority of the time our wastewater is not hazardous, what are our options for disposing of it? We have already eliminated dumping it onto the streets. A good general rule of practice is to always dispose of the wastewater into the sewage treatment system only after the large particle solids and carpet fibers have been filtered out. There are several ways of getting the wastewater into the sewage treatment system. The first, easiest, and least cumbersome and expensive way is to find drain access to the sewage treatment system. This may be through a garage drain, toilet, bathtub, shower, sink, or janitorial closet sink. Transporting the wastewater to these drains on-site is best accomplished by the use of a waste pumping system. Several different types of waste pumping systems exist. Some mount directly in the waste tank and some are attached to clear view or metal filter boxes. A second way to dispose of wastewater into the sewage treatment system is simply by using the waste tank collection system of your equipment to hold the wastewater so that you can transport them to a site where direct drain access to the sewage treatment system can be used. In this case, the filtered wastewater can directly be dumped into the drain. Obviously, in these cases, the larger the waste tank, the more efficiently you can do this. Some cleaners have taken their wastewater to dump at car washes. Most car washes filter and recycle their water. If not, then they do feed them into the sewage treatment system. Whatever the case, never dump at a car wash without first making arrangements with the car wash owner/operator. Also, make sure you filter the lint, large particles, and carpet fibers before you dump the water. These materials will clog up the drains and the recycling pumps at the car wash.

There are exceptions to this "dump your wastewater in the sewage treatment system" rule. An important item to remember is that when you dispose of industrial wastewater, you are literally under the jurisdiction of at least three government agencies. The local agency is usually a city or county wastewater management force. The state agency is usually a state environmental protection agency or industrial wastewater agency. The federal group is usually the United States Environmental Protection Agency. Hopefully, these groups are working together, but that is not always the case. Generally, local ordinances are more specific and stricter. It is usually a local or state agency that may contact you. We will discuss how to work with these agencies later. The best way to find out if you can legally put your filtered wastewater into the sewage treatment system is to ask your local wastewater

management agency. What kinds of exception will you find? Plenty. For instance, in El Paso County, Colorado, it is illegal to dump into the storm drain. However, it is not illegal (in fact, it's recommended) to dispose of industrial wastewater onto grass and shrub covered land. A customer of ours in Alaska has really ran into difficulty. His city does not have a sewage treatment system (everyone uses septic tanks). It is illegal to dump into the storm drains or onto the land. So what is he supposed to do? Transport the wastewater to a disposal site in Utah? He has to build a treatment system in his back yard. This is a case of bureaucracy being unable to find a reasonable solution. On the issue of septic tanks, generally, your wastewater should only be disposed of into septic tanks and septic systems when you make sure the enzyme balance within that septic system has not been damaged. If it has, then you must restore that balance.

What about dumping your wastewater onto land? This should not necessarily be a "cut and dry" issue. Unfortunately, with many bureaucrats, it is. Obviously, a better solution is the sewage treatment system, but sometimes that is impossible, impractical, or too expensive. I don't think any well-meaning environmentalist or wastewater management enforcement executive really wants to put a conscientious professional cleaner at an extreme competitive disadvantage. What is the make up of the non-hazardous chemical ingredients within industrial wastewater? Basically, our cleaning chemicals contain anionic or nonionic surfactants and alkaline builders. None of these are harmful to plants. Most are very biodegradable. In fact, many of the ingredients contained in our cleaning chemicals are also contained in fertilizers. There has been a lot of publicity surrounding phosphates that are contained in many carpet cleaning detergents. Phosphates themselves are not hazardous. They are actually a fertilizer. In too high a percentage in the water supply they can cause too much plant and algae growth. Theoretically, this growth of plants and algae could become too intense. This would harm water wildlife because the plant and algae growth would use up too much of the oxygen, not leaving enough for the wildlife. In addition, a lake could become more of a swamp because of too much algae and plant growth in the water. Therefore, these ingredients can be harmful to fish or other water life when too much phosphate is in the water supply. Only in Oregon are phosphates in industrial cleaning detergents prohibited. If you continue to use cleaning detergents that contain phosphates, never dispose of your waste water within two miles of a stream or other water flow. There is something else you should consider about waste water disposal: Picture your goldfish trying to breathe in your bath water after you've just shampooed your hair. The detergents inhibit the natural function of the gills, which could cause an oxygen shortage to the fish. That's why our wastewater must never be directly or even in close proximity, be dumped into the water supply. Some enforcement agencies use a "two mile" rule. In some places, you may dispose of industrial wastewater onto the ground as long as you are over two miles from a stream, river, or lake. Our industrial wastewater is probably not harmful to wildlife. However, many agencies feel that "probably" is not good enough. They may be right. However, many city and county sewage treatment systems are archaic in nature and/or overloaded. They would prefer that wastewater not be disposed of into the sewage treatment system. Many rural areas don't have sewage treatment systems. Many agencies feel that there are no ill effects of dumping industrial wastewater onto the ground. This is a complex issue. Whenever possible, your industrial wastewater should be disposed of in a sewage treatment system.

Other alternatives that sometimes are given are simply not realistic. Carpet cleaners cannot afford to transport their industrial wastewater to a hazardous disposal site. Most cities don't even have one. They can't afford to pay someone to take it away—that can cost up to \$3,000.00 for a fifty-five gallon drum of soapy water. That's absurd! How can any agency fairly enforce waste disposal laws that prohibit dumping into the sewage treatment system to companies that only use portable equipment? Laws and regulations are only useful if they can be fairly enforced against every company. Environmentalists and agencies must work together with cleaning companies to develop reasonable solutions to this challenge. As stated earlier, no well-meaning environmentalist or agency wants to force a cleaning company which makes such positive health contributions to the indoor environment, out of business, by passing unreasonable rules and regulations.

### **HOW TO DEAL WITH A REGULATORY AGENCY?**

That brings us to our discussion of what to do when you deal with a regulatory agency. First and foremost, be honest. The best defense is a good offense! When you show and demonstrate that you are genuinely concerned about being in compliance with regulations, they are much more likely to work with you. When you show and demonstrate that your company is environmentally conscious, then reasonable solutions seem to be found. Second, have your Material Safety Data Sheets ready for the chemicals you use to clean carpets. Explain to the agency what each chemical is and how it is used. Third, don't be afraid to let them test your wastewater. In fact, request it. Fourth, if you have been accused of a "wrongdoing", don't panic. Be courteous and helpful. If you are dealing with a totally unreasonable individual, (a bureaucrat who wants to save the world in two months or thinks all business people are trying to destroy the world with pollution) always ask for a meeting with his/her supervisor. Usually, more experienced regulatory people are better able to reach reasonable solutions. If you have to, go all the way to the mayor, county commissioner, or governor's office. Remember that government is for the people. Demonstrate a true willingness to reach solutions that are reasonable to everyone's needs. Fifth, have a posted waste water disposal policy for your company at your office, garage, and on

each van, so that you and your employees know the proper procedures for the disposal of industrial wastewater. After reading this essay, if you get caught for illegal dumping of wastewater into the streets of your town, as they say, "Don't come crying to me." Finally, sell the fact that you, like they, are in the cleaning business. It's your job to clean up indoor environments. It's their job to clean up outdoor environments. You need to work together.

### **PRE-EXISTING CONDITIONS**

A few important thoughts before we close. We all must deal with an important issue. That is what we can do about "pre-existing" conditions. "Pre-existing" conditions in this case are chemical residues that are left in the carpet by installers, pesticide applicators, or even by the homeowner, that may be picked up during the cleaning process, thus perhaps making the wastewater hazardous. Truthfully, the chance of any residue being enough to make one hundred gallons of wastewater hazardous are slim, but it could happen. What should we do? First of all, pesticides are becoming organic and safer. Second, installation people are now using cleaning solvents that are environmentally friendly. Thus, the main people who must take responsibility for what chemicals are put on their carpet are the carpet consumers.

### **WHAT IF OUR WASTE WATER IS HAZARDOUS?**

Occasionally, the cleaning process can result in the production of hazardous wastewater. A professional cleaner must learn how to identify these situations and take appropriate actions. If the people who have hired you to do the work are not willing to pay to have the appropriate authorities and experts dispose of the hazardous wastes properly, then you must walk away from the job.

### **WHAT ABOUT OTHER CARPET CLEANING METHODS?**

Finally, we need to take a close look at what kind of wastes other carpet cleaning methods produce. Obviously, in hot water extraction "steam" cleaning, water is the main carrying agent and ends up "holding" most of the soiling. Does that make so-called "dry" cleaning solution methods better for the outdoor environment? Not necessarily. The wastes produced by these dry cleaning methods may or may not always be disposed of into the sewage treatment system, but almost exactly the same sets of rules and regulations apply. In the case of dry extraction absorbent compounds, the resulting wastes, if disposed of in a trash can, will still end up in a sanitary landfill, where they will never be treated by anything. If they contain hazardous materials, then they have been illegally and improperly disposed of.

First, we must examine the ingredients of these cleaning solutions. Dry powder cleaning chemicals, usually consist of a carrier that is cellulose or urethane based. These carriers are saturated with anionic or nonionic detergents. The cleaner who is using dry powders is responsible for determining whether the resulting wastes are hazardous or not. Bonnet cleaning solutions include the use of water both in the mixing of the chemical as well as in the cleaning of the bonnet pads. Usually, bonnet cleaning solutions contain similar ingredients to preconditioning agents. Often times though, they have a higher solvent level. Since bonnet cleaning solutions are not extracted from the carpet, the only consideration is whether washing out the bonnet pad might produce hazardous waste. Normally, this will simply be industrial waste also. Dry foam shampoos are anionic and/or nonionic detergents. They are mixed with water before application. Dry foam application machines produce waste that must be properly disposed of. With the use of dry powder, bonnet cleaning solutions, and dry foam shampoos, sometimes pre-conditioners can be used in extreme soiling circumstances. The use of carpet shampoo involves anionic surfactants that are mixed with water. Shampoos are usually vacuumed out or wet extracted out resulting in cleaning wastes.

Second, with any cleaning method, the determination and classification of the wastes, as well as their proper disposal, must be made by the cleaner.

### **PRINCIPLES OF WASTE WATER DISPOSAL**

In closing, let us summarize what we have learned:

- 1) Carpet cleaning wastewater makes up less than 1/2 of 1 percent of the total wastewater problem.
- 2) Wastewater should be disposed of properly, primarily because it is the right thing to do.
- 3) Never dispose of wastewater directly into the streets or storm sewer system.
- 4) Before disposing of wastewater, it should be filtered to remove fuzz, lint, carpet fibers and other large particles.
- 5) Wastewater that is produced by the cleaning process is classified as either industrial waste or hazardous waste.
- 6) The use of most pre-conditioners and carpet rinsing detergents in the hot water extraction cleaning process normally results in industrial wastewater that does not contain hazardous materials.
- 7) The pH of industrial wastewater should be between 5 and 10.

- 8) Spotting procedures should be performed after the regular cleaning process. Harsh alkaline or acid spotting solutions must be neutralized prior to being extracted. Spotting solutions should not be used in quantities larger than 8 ounces per 1000 square feet cleaned.
- 9) The best way to dispose of cleaning industrial wastewater is by directly placing it into an outlet which directly goes to the sanitary sewage treatment system. This can best be accomplished by waste pumping systems or by large capacity wastewater holding tanks.
- 10) Cleaners who use portable cleaning equipment must follow the same rules.
- 11) Cleaning wastewater disposal falls under the jurisdiction of local, state, and federal regulations.
- 12) Some jurisdictions allow for the disposal of industrial cleaning wastewater onto the ground far from a water supply. In general, it is still better to dispose of it into the sewage treatment system.
- 13) Generally, do not dispose of industrial cleaning wastewater into septic tank systems without re-establishing the enzyme balance within the septic system.
- 14) Industrial cleaning wastewater can be harmful to fish and other water wildlife.
- 15) In dealing with regulatory agencies, you should:
  - a. Be honest and demonstrate a commitment to being in compliance with regulations;
  - b. Have Material Safety Data Sheets for the chemicals that you use to clean with ready to present at all times;
  - c. Allow, even request, that they test your wastewater;
  - d. If dealing with an unreasonable person, be courteous but ask to speak with his/her supervisor; and
  - e. Maintain a posted and written policy for your company for disposing of wastewater.
- 16) Pre-existing chemical residues are the responsibility of the carpet owner.
- 17) If the cleaning wastewater is hazardous, it must be treated as such and disposed of properly and legally.
- 18) All carpet cleaning methods produce waste that must be handled and disposed of properly.
- 19) If you choose to ignore these rules, then you are on your own.