

SIGNIFICANCE OF WATER IMPURITIES IN CLEANING JOB

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Water is Universal Solvent

Water is essential to any cleaning process where a liquid is involved. This understanding allows us to solve cleaning problems in the most effective, and more environmentally and safe manner.

Impurities in Water

Dissolves minerals, Suspended impurities, dissolved gases and having biological loads too are impurities commonly found in water.

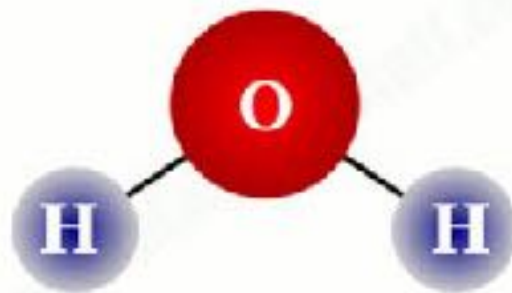
What is Water

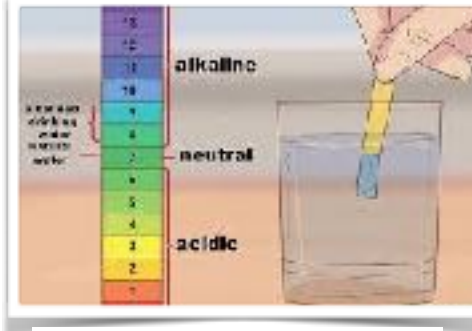
Water is a molecule of bonded hydrogen and oxygen atoms. The smallest particle of water is a water molecule, which is made of two atoms of hydrogen bonded to one atom of oxygen.



The impurities present in water alters the cleaning purposes or may disturb the hygienic environment because of adverse effects of impurities presents in the water.

Water is a basic component of many cleaning tasks. But some attributes, such as mineral content, salt water and temperature, can be affect cleaning power.





Acidic pH is very harmful for marble and natural floor.

- Calcium contents of natural floor chipped out.
- Acidic water break out polishing surfaces or laminating surfaces
- Acidic water on any metal surfaces also causes rusting and corrosion and pitting.

Alkaline water indicated presents of high alkaline salts in water such as calcium and magnesium and other oxide forms.

- Alkaline natural water indicated water is hard and it may precipitated on surfaces
- Alkaline water also alter the performance of cleaning chemicals and may give adverse results on cleaning task.

Hard water

The effectiveness of soaps, detergents and surfactants is reduced when used in hard water. Hardness in water is caused by the presence of mineral salts – most commonly calcium and magnesium, but sometimes also iron and manganese. The mineral salts react with soap to form an insoluble precipitate known as soap film or scum.

Soap film does not rinse away easily. It tends to remain behind and produces visible deposits on surface.

Active ingredients of cleaning chemical used up by reacting with hard-water minerals to form the film. This reduces the amount of active agent available for cleaning.

Soft water:

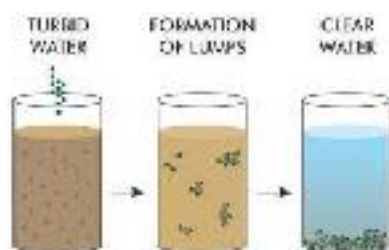
If water does not contains high amount of minerals (like River water, dam water, lake water) it's called soft water. Soft water is always advisable for any cleaning task. Soft water application for laundry detergent is also very important.

Microbiological Contaminants of Water-



Suspended Impurities In Water:-

- Dirt, dust, biological contaminants, agricultural leaves, debris, industrial waste dust, ash etc. are suspended impurities.
- Surface water having high amount of suspended impurities and ground water contains the less.
- Influences dirtiness instead of cleanliness.
- Can control by simple flocculation technique such as usage of alum or



through filtration

If Biological Growth & Suspended impurities ignored while cleaning task instead of clean and hygienic facilities one can multiply chances of spreading infectious bacteria and germs.

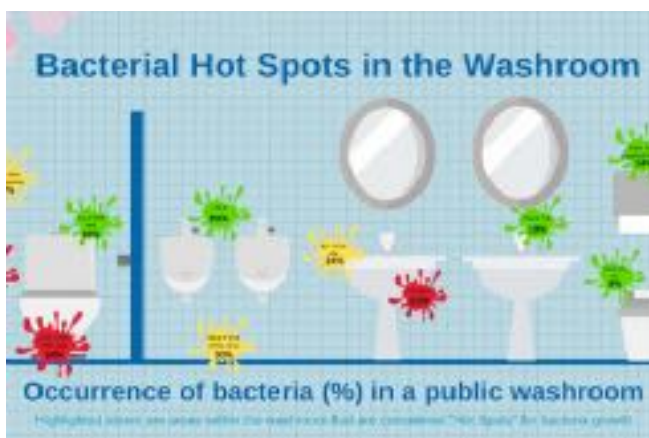
Water contains many of microbiological impurities in the forms bacteria, fungi, slimes and algae. E -Coli, Bacillus subtilis, salmonella typhimurium and Candida albicans yeast and Sulphur reducing bacteria are few of the species generally found in water.

If the water being used to having high microbiological growth than the purpose of cleaning mares. Instead of cleaning your surfaces may load with high contaminant. Generally premium floor cleaners contain specifics disinfectants but if floor cleaners are not having disinfectant property, we are simply laying infectious growth on our floor instead of truly cleaning.

The adverse effect of high biological contaminated water is not only on the floor but every surface which are being cleaning such as bathroom, washroom, kitchen area, dishwasher, and hard surfaces, glasses, and furniture and fixtures.

Secondly biological contaminated water influences bad odor because of the presence of specific species. Many times you may observe that mops/ duster if not clean properly or using local chemicals having tremendous foul odors because of present of microbiological growth.

Thirdly, some of the facilities uses ready to use product and further it's diluted with water having high biological growth. This practice influences growth of biological contaminants. If hand wash or dish wash further diluted with contaminated water (Having high bacteria growth) it's influences bad odor/ decompose of the products and influences unwanted disease.





Water Impurities And Stains:-

Pink, red, brown, black, or blue stains to appear on your precious floors, surfaces or fixtures.

Awful stains may presents on fixtures, appliances, in washroom area, toilets bowl or when washing laundry because of present of specific impurity in water.

What to Do?

Facility Manager or In charge of Cleaning Department should well aware about the quality of water which are being used for cleaning, or for various purposes across the facility. Review of water quality, its seasonal changes and corrective measures to make water compatible for facility should be implemented.

Water Impurities & Stains :-

Pink Stains

That appear in the toilet are very common on ground water or city water that is low in chlorine. Infect pink stains on toilet bowl are not caused by the water itself, but it is caused by airborne bacteria. One can control such by frequent cleaning with proper toilet cleaners.

Red Or Rust Stains:

Iron is one of the most common elements in the Earth's crust and is found in ground waters. When iron concentrations is higher it may causes staining of fixtures and clothes, and give the water a bitter or rusty taste.

Normally iron is found in a dissolved form and does not have any colour in natural water and the water looks clear transparent. But when it comes in contact with oxygen, or after the mixing of oxidising agent such as chlorine bleach or hydrogen peroxide, this ferrous iron will be oxidised ("rusted") to the ferric form.

Generally toilet bowl, flush tanks and inside washing machine or dish washer observed such spot because of present of iron oxide.

Light brown stains:

Usually present of manganese in water causes light brown spots. Manganese is found in many ground waters.

High amount of manganese also cause discolouration of sinks as well as clothing, and give a sour, asphaltic or greasy flavour to water.

Like iron, Manganese is also found in dissolved form and causes brown / black clouded precipitated forms once its oxidizes. This can happen in toilet flush tanks and in the washing machine or dishwasher.

The organic material Tannin also found in water and may causes tea-colored staining on floor or washroom



How ALTRET Can help

- ALTRET having vast experience to serve Industries and understand complex problem related to water chemistry, surfactant chemistry and cleaning science. ALTRET provides complete water analysis testing along with Microbiological tests to assess the issue related to water impurities and provide the best solution based on your specification.

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surfaces. It may also give light brownish streaks in your washing are or washing machine.

Black staining:

The present of iron sulphide causes Black spots same way Manganese sulphide also causes black spots.

The present of iron, sulphate and the most importantly present of iron reducing bacteria causes to form iron sulphide irons which also gives smell like rotten egg. High concentration of manganese also causes black deposits and staining.

Blue staining:

It begins with blue staining on your fixtures and tubs. You may notice laundry washing spotted with light blue, and the drinking water may have a bitter taste. Eventually the copper pipe corrodes and then you begin to see pinhole leaks. These problems are caused by your copper pipes corroding.

Copper water pipe deterioration is often caused by water that is lower on the pH scale, which means acid well water. It may also be brought on by water which is high in pH and total dissolved solids.

Conclusion:-

Water Chemistry & Cleaning Chemistry are closely associated , Once The water based cleaning being practiced, through study of water chemistry can't be ignored.

References:-

1. ALTRET Handbook on water chemistry
2. Microbiology - Michal Placezer Jr., ECS Chan etc. 2001
3. Blog- <https://cleanwaterstore.com/blog/water-stains-how-to-identify-the-top-5-stains/>