Number of water molecules in 1 litre of water

How many atoms are in the human head? We can calculate the number of atoms in your head if we know the density and a constant call the Avogadro number. This is really just an estimate, but it will be good. The equation is quite simple. The number of atoms of any substance in a volume is: # of atoms = n * (density) * volume / (molecular weight) .n is a constant call the avogadro number and its equal to 6.022 * 1023 atoms / mole. It can also be molecules per mole. In the volume of the density times of the formula above is only the mass. If you know how heavy it's something or what is your volume and density you can easily do it, start with a simple problem. A liter of water is 1000 cubic centimeters. Water is easy because every cubic centimeter has 1 gram of mass. Water is composed of 2 hydrogen atoms and an oxygen atom. Hydrogen has an atomic weight of 1 and oxygen has an atomic weight of 16. Water has a molecular weight of 18. The liter of water has 1000 grams. The number of moles is 1000/18 = Â, 100.556Â ¢ Â ¢ moli. The number of molecules is therefore 6.022 * 1023 * ã, 55.556 = Â, 3,346 * 1025 molecules. The number of atoms is 3 times larger because each molecule has three atoms, so there are 1,0038 * 1026 atoms in a liter of water. Now we know enough to answer your question. A typical human head weighs about 10 - 12 pounds. We are mostly water facts. When you go to swim probably noticed that almost everyone floats with just part of their head out of the water. This observation will lead you to conclude that our density is very close to water density. Armed everything we can estimate the number of atoms in your head. A pound is 454 grams, so a 10-pound human head is 4,540 grams. If I assume we are mostly water on average because our average density is approximately that of water, then I can use the above information on the water to get the Moles per head = (4,540 grams) / (18 grams / mole) = 252.22 Molesmolecole for Mole = 6.022 * 1023 * 252.22 moli = = Molecuulatoms per head = 3 * molecules = 4.56 * 1026This is 456 trillion trillion atoms! I will conclude on a historical note. Avogadro was an Italian physicist who described for the first time the Avogadro constant as a hypothesis in 1811. He was trying to understand why in chemical reactions that involve the observation that the same volumes of different gases had the same number of moles . This was found true even when the masses were very different. The idea that a mole of any substance has exactly the same number of atoms (or molecules) regardless of how the substance has been made has been explained by Avogadro and the name of him came to the number of him since then . Author: Paul Brindza, experimental room A design leader (other answers by Paul Brindza) In addition to the dissolved substances, the water of aquaculture systems contains suspended material composed of soil particles (predominantly sex and clay), bacteria, phytoplankton, zooplankton and organic debris. Photo by Darryl Jory. Aquaculture producers must be worried about different dissolved substances and suspended in water. Concentrations or abundance of these substances can be very large or extremely small. For example, the concentration of soluble inorganic phosphorus in aquaculture ponds is often less than 0.05 milligrams per liter (mg / l), the copper concentration could only be 10 to 15 micrograms per liter (mg / l) or The number of phytoplankton individuals could number 50 million to 100 million individuals per liter. These quantities are so small or large numbers that is difficult for the mind to understand them. Water molecules A logical initial point in an attempt to understand the relationships of sizes and abundances of substances found in the water is to consider the water molecules themselves. According to Avogadro's constant (with name scientist Amedeo Avogadro, this constant is the number of constituents - usually ions, atoms or molecules - contained in the quantity of substance given by Moli, the basic unit of quantity of substance in the international system of units or international system or yes), a molecular gram (or wheel) weight of a chemical compound or an atomic weight of an element contains 6.02 molecules or atoms Ãƒ 1023a, respectively. The value 6.02 Ãƒ 1023a is often called AvogadroÃ ¢ s number, and it can also be written as 60,000,000,000,000,000,000,000 or 602 sextillion single atoms or molecules. Water (H2O) has a molecular weight of 18 grams (G), and 1 liter (L) of water weighs 1,000 g. A molecular weight is often referred to as moles. Thus, 1 l of water contains 55.6 moles of water. Multiplying for avogadroÃ ¢ s number we find that 55.6 water moles contains 3.34 molecules, ã, 1025. The water molecules are obviously very small, with rays of about 0.275 nanometers (Nm) or 0.000000275 meters. Inorganic ions Inorganic ions such as nitrate, ammonium, phosphate, calcium, etc. They are slightly larger molecules of water with rays of about 0.4 to 0.6 Nm. The largest organic molecules in natural waters are humic substances with rays of 1 at 10 nm. Substances dissolved in water are considered those that will pass a filter with openings of 2 micrometers (2,000 mm). So, some of the fraction of dissolved solids measured is consisting of substances higher dimensions encountered dissolved ions and organic compounds. A concentration of soluble inorganic phosphorus 0.05 mg / l looks like a very small amount. But, is it a very small number of phosphate ions? To respond, we need to know that soluble inorganic phosphorus is an atomic weight of 31 g. It follows that 0.05 mg (0,00005 g) of phosphorus represents 1.61 Ãƒ 10-6Â, of an atomic weight of this element (0,00005 g of phosphorus, 31 g phosphorus atoms per atomic weight). An atomic weight of phosphorus contains atoms avogadroÃ ¢ s number. Multiplying 1.61 Ãƒ 10-6ã, phosphorus / l piers for avogadroÃ ¢ s number reveals that 1 l of water containing soluble 0.05 mg / l It has 9.7 ãƒ 1017ã, (940,000,000,000,000,000,000) Phosphorus atoms (or phosphate ions) one a very large number. The problem of a phytoplankton cell require phosphorus as a nutritious is that it must absorb phosphorus between 3.34 water molecules Ãƒ ã, 1025ã, there is no 3.4 million water molecules [(3.34 Ãƒ 1025ã, water molecules), (9.7 Ãƒ 1017ã, Phosphorus atoms)] for every dissolved inorganic phosphate ion. Surprisingly, planktonic algae are able to absorb phosphorus between this vast number of water molecules. But absorption is not for simple diffusion, since the concentration of phosphorus in aquatic plants is much higher than that around Water.PhyToplankton are small and have a large surface with respect to their volume to increase contact with Water, but the phosphorus movement in their cells depends on an active process, which consume energy. Suspended materials In addition to dissolved substances, water contains suspended substances consisting of soil particles (mainly limo and clay), bacteria, phytoplankton, zooplankton and organic debris. These entities are also small (Table 1). The smaller soil particles, bacteria, and some of the planktons are not visible to the naked eye. Single particles (greater than 40 microns) are visible, even if not in detail. Boyd, Substances, Table 1 ParticleLength (Micron) Bacteria0.2 Â ¢ 10 Clay0.5 Â ¢ 2 Phytoplankton2 Â ¢ 2,000 SILT2 Â 50 SAND50 A 2000 Zooplankton100 Â ¢ 2,500 Â ¢ Detritus0.2 Organic 2,500 table 1. Suspended particle measurements in water. Note: individual larger 40 micron particles are considered to be visible to the naked eye. This dimension is equivalent to 40,000 nm, 0.04 mm or 0.0016 inches. High concentrations of colored dissolved compounds such as humic substances, small clay particles and small phytoplankters and color zooplankters impart to water despite their individual particles not being visible. For example, the blooms color water a shade of green, while the humid substancesWater with a black or combined iron tone to create a yellow shadow. Bacteria usually are not visually detectable, and this is probably the reason why they are the most misunderstood of particles in the water of the pond. A small particle has a very large surface related to its volume. The volume [volume = (4/3) (3,1416) (radius cube)] of a single 50 micron spherical phytoplankton organism of 50 microns would be 5.23 Ã £ - 10-13 cubic meters, while the surface [Area = (4) (3,1416) (ray square)] of this organism would be 3.14 square meters. In a liter of water, 50,000,000 of these organisms would have a combined volume of 26.2 ml and a combined area of 1.57 square meters. The small soil particles are very absorbent due to their large surface. Furthermore, the large surface of planktonic algae increases their contact with substances in water to facilitate nutrient absorption. Turbidity sea water has a much greater concentration of the main inorganic ions that make fresh water. However, light penetrates as deeply in normal sea water while it will be in normal fresh water. The most common ions do not affect the clarity of water, but great molecules such as those of human substances interfere with the penetration of light and impart the color to water. The larger particles in the water interfere with the penetration of light and cause turbidity. Turbidity is usually useful when it results from the plankton, because these organisms serve as food for shrimp, fish and other larger aquatic animals. Even the Plankton's turbidity is useful by limiting visibility in the water to protect the larvae of fish and shrimp from predatory aquatic organisms. The turbidity also reduces the capacity of the prediaced birds to see and capture fish and shrimp from aquaculture ponds or other structures Finally, the reduction in the penetration of the light of turbidity reduces the probability of annoying infestations of aquatic macrophytes (often called aquatic weeds). Of course, too much too â € "Particular Phytoplankton - can lead to low concentrations of dissolved oxygen at night. Torbidity from suspended soil particles also limits predation on small animal culture and growth of underwater aquatic weeds. But the turbidity of soil particles is usually considered negative that positive in natural aquatic environments, because it reduces light penetration and photosynthesis. Of course, in the aquaculture systems to which feed and aeration are applied, torbidity of soil particles suspended if not necessarily harmful. Limits the amount of Phytoplankton biomass and minimizes daily fluctuations in dissolved oxygen concentration. It should also be noted that â€ "sapore-sapore" in the flesh of the species of culture caused by certain species of green seaweeds blue is rarely a problem in the swirling ponds from the suspended soil particles. â€ | We hope that you would like to support our mission to document the evolution of the global aquaculture industry and share our vast network of expanding knowledge of contributors. By becoming a member of the Global Aquaculture Alliance, it ensures that all the pre-competitive work we do through the benefits, resources and events of members can continue. 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the density of water is 1 gm/ml .the number of molecules present in 1 litre of water are. the number of molecules in one litre of water is (density of water =1 g/ml). calculate the number of water molecules present in 1 litre of water. 3.the density of water is 1 gm/ml .the number of molecules present in 1 litre of water are. how many molecules of water are there in 1 litre of water. how many water molecules are in 1 liter of water. how many molecules in 1 liter water