

What is the average cost doing a natural pool versus a chlorine pool?

It depends on the TYPE of NSP.

A **BioSwimPond** (using an aquatic wetlands regeneration zone) requires approximately the same sized area (in ft²) for the regeneration zone as the swimming area. So, a 500 ft² swimming pool will be a 1,000 ft² of project area. Depending on the materials of construction this type/size usually starts at \$125k.

A **BioPool** (using a biofilm filter) requires much less space. The biofilm filter vault requires an extra 50 ft² of area added to a 500 ft² pool. Depending on the materials of construction this type/size usually starts at \$75k

What is the yearly maintenance on a natural pool in comparison to a regular pool?

Basis for comparison: 500 ft², pool, 18,000 gallons, 20-week season. Both pools should be brushed weekly, vacuumed, clean skimmer baskets and remove excess leaves/debris.

NSP maintenance cost is purely utility cost. Since these systems are "open atmosphere" and not "pressure filter" systems and because they use state-of-the-art, energy efficient, variable speed, programmable pumps that run 24/7 during the season of use, the electrical cost is typically less than \$40/mo.

For chemical pools, the industry comparison on operating a 18k gallon pool 12 hours a day with a pressured filter (sand, cartridge, or DE) typically average \$75/mo. PLUS Chemical cost to MAINTAIN proper chemistry in a PROBLEM FREE pool, and maintain water balance is \$50/mo.

NSP operational cost \$200

Chemical pool operational cost \$600

How can testing be applied to NSP chemistry to establish a correct diversity in beneficial bacteria as opposed to problematic bacteria and protozoan that frequent non chemically treated water? - Brian Connors / Aqua Mag

It is true, that "problematic" (pathogenic) bacteria, cysts, amoebas (protozoa) do exist in ALL water, both chemical and non-chemical. However, in a properly designed and operated NSP, the number of beneficial microorganisms VASTLY outnumber and outcompete these pathogens for the nutrients they need to thrive. Nature's food web favors competition to reward a healthy ecosystem. In the absence of excess nutrients, the natural biome does not allow pathogens to thrive.

A full array of quantitative and qualitative testing can be done to assess the overall health and profile of the micro biome. For public venues, the EPA and CDC recommendation is to test the level of E coli (fecal coliform) as the primary "indicator species" of pathogens. If found to be more than 165 cfu/ml then the water is likely to also be harboring these other pathogens at elevated levels and the pool is closed. Once the source of excess nutrients is identified and remedied, the NSP system will naturally "scale up" to exhaust this



excess of nutrients and the system will balance its population accordingly, and acceptable water quality will return generally within 2 days.

Do beneficial bacteria consume skin cells or fecalform bacteria? - Brian Conners / Aqua Mag

Organic compounds (and waste) from the body are nutrients for the biological system employed in an NSP. Fecal Coliform bacteria are poor competition for these nutrients because they are vastly outnumbered by the beneficial bacteria, fungi, zooplankton, annelids, rotifers, etc...

Fecal coliform bacteria exist in ALL water, natural and chemically treated. Their population is suppressed by the removal of these nutrients either through biological consumption, or chemical eradication.

Is the natural method as safe as chlorine in preventing 2 people from spreading anything harmful while spending time in the water? - Brian Conners / Aqua Mag

In both a natural pool and chemical pool, the opportunity for spreading a pathogenic organism is the same. Proper use instructions, required to be posted on public pools, cautions against "spouting water" (taking water in the mouth), swimming if sick, and swimming with open wounds. If you find yourself in the midst of a brown cloud in the water, it won't matter how the water is being treated.

What are some of the things that can go wrong with a natural pool?

Unmitigated intrusion of nutrient laden, surface water runoff, or the application of landscaping fertilizers (spray or granular). Poor routine maintenance and cleaning. So, the same things that can go wrong with a chemical pool.

How long does it take the water in an NSP to acclimate to plant life?

The BioSwimPond begins circulating as soon as the local climate allows for it (ie. The threat of freeze damage to plumbing and equipment has past). The plant life will progress at its natural pace, with new growth and mature throughout the season. The biological filtration however is NOT dependent solely on the plants. Biofilm is already hard at work converting organic waste to plant nutrients, as soon as the water temperature achieves 50°F and is circulating through the sedimentation substrate in which the plants are rooted. Like in a chemical pool, the earlier the pool is circulating in the season, the better the water quality.

The only added maintenance of the BioSwimPond is the need to cut back the aquatic vegetation in the fall/winter and remove the detritus.



What is the ideal pH range a natural pool needs to be at?

The typical pH for an NSP is 8.0 – 8.2. There is no need to do any pH adjustment, the system will manage itself based on the local climate, weather, and substrate. When limestone is used as the substrate, the pH is generally slightly higher (8.4)

Can you retrofit a chlorine pool to be a natural pool?

Absolutely. Either method of biological filtration can be engineered into (or on to) an existing pool. Just remember if you want to convert a 20'x40' pool into a BioSwimPond, half of the pool (400 ft²) will be regeneration area.

The most economical method for converting an existing pool to an NSP is using the Biofilm filter system. These conversions on a pool up to 500 ft² typically cost around \$25k for installation labor, equipment, and materials.

Can you build a natural pool on smaller sized lots?

We're doing 200 ft² plunge pools with a biofilm filter. So YES,

What things should you consider when building a natural pool?

You'd use all the same considerations as a chemical pool. Size, shape, feature, function, number/type of bathers. Elevation properly set to avoid surface water runoff. Permitting an NSP is the same as permitting a chemical pool with regards to setbacks, permeable % of lot, etc...

Will you find wildlife in a natural pool? Snails, Amphibians, Insects?

Probably. The upside is that if they are trapped in an NSP they won't die from the chemical exposure. Most clients seeking an NSP want and expect this type of environment.

