contact with the fluid, obtain nutrients and propagate. Microbial growth in the water is often sufficiently robust that the process equipment becomes clogged or damaged and requires extensive chemical treatment. By removing microorganisms before they are able to propagate substantially, the present invention helps to reduce the health hazard associated with the cooling fluids and the cost and dangers associated with chemical treatment programs.

Similarly, breathable air is often recycled in transportation systems, either to reduce costs (as with commercial airliners) or because a limited supply is available (as with submarines and spacecraft). Efficient removal of microorganisms permits this air to be recycled more safely. In addition, the material of the invention can be used to increase indoor air quality in homes or offices in conjunction with the air circulation and conditioning systems already in use therein. The purification material of the invention can also be used to purify other types of gases, such as anesthetic gases used in surgery or dentistry (e.g., nitrous oxide), gases used in the carbonated beverage industry (e.g., carbon dioxide), gases used to purge process equipment (e.g., nitrogen, carbon dioxide, argon), and/or to remove particles from surfaces, etc.

In each of these applications, the method of using the material of the invention is relatively simple and should be apparent to those of skill in the filtration art. The fluid to be filtered is simply conducted to one side of a block or sheet of material of the invention, typically disposed in some form of housing, and forced through the material as the result of a pressure drop across the purification material. Purified, filtered fluid is then conducted away from the "clean" side of the filter and further processed or used.

The invention having been thus described by reference to certain of its specific embodiments, it will be apparent to those of skill in the art that many variations and modifications of these embodiments may be made within the spirit of the invention, which are intended to come within the scope of the appended claims and equivalents thereto.

What is claimed is:

1. A purification material for fluids, wherein the material comprises apatite and a polymer material binder therefor, is in the form of a block or a sheet, and is sufficiently porous that fluids can flow through the purification material and separate microorganisms from the fluid or maintain the separation of microorganisms from the fluid.

2. The purification material of claim **1**, in the form of a porous block.

3. The purification material of claim **2**, wherein the porous block is rigid.

4. The purification material of claim **1**, in the form of a porous sheet.

5. The purification material of claim **4**, wherein the porous sheet is rigid.

6. The purification material of claim **4**, wherein the porous sheet is flexible.

7. The purification material of claim **1**, wherein at least a portion of said apatite is in the form of hydroxylapatite.

8. The purification material of claim **1**, wherein the binder is a polymer material melting between about 50° C. and about 500° C.

9. The purification material of claim **8**, wherein the polymer is stable under sterilization conditions.

10. The purification material of claim **8**, wherein said binder is selected from the group consisting of thermoplastics, polyethylene glycols or a derivative thereof, polyvinyl alcohols, polyvinylacetate, and polylactic acids.

11. The purification material of claim **10**, wherein the thermoplastic is selected from the group consisting of nylon, polyethylene, polyvinylchloride, fluorocarbon resins, polystyrene, polypropylene, cellulosic resins, and acrylic resins.

12. The purification material of claim **8**, wherein the polymer material comprises a naturally occurring polymer.

13. The purification material of claim **8**, wherein the polymer material comprises an electrically conductive polymer.

14. The purification material of claim **12**, wherein the naturally occurring polymer is selected from the group consisting of natural and synthetically modified celluloses, collagens, and organic acids.

15. The purification material of claim **8**, wherein the polymer material comprises a biodegradable polymer.

16. The purification material of claim **15**, wherein the biodegradable polymer is a polyethyleneglycol, a polylactic acid, a polyvinylalcohol, or a co-polylactideglycolide.

17. The purification material of claim **8**, wherein the purification material is in the form of a sheet and is disposed on a woven web.

18. The purification material of claim **8**, wherein the purification material is in the form of a sheet and is disposed on a nonwoven web.

19. The purification material of claim **1**, wherein the binder is present in an amount ranging from about 10 wt % and about 99.9 wt % of the total weight of the purification material.

20. The purification material of claim **1**, further comprising one or more additional adsorptive materials different from apatite.

21. The purification material of claim **20**, wherein said additional adsorptive material comprises granulated activated charcoal.

22. The purification material of claim **21**, wherein at least a portion of said apatite is present in the form of bone char.

23. The purification material of claim **22**, wherein said bone char and said granulated charcoal are present in approximately equal amounts.

24. A purification material for fluids, in the form of a block or sheet, comprising bone char, activated charcoal, and a polymeric binder material, that is sufficiently porous that fluids can flow through the purification material and separate microorganisms from the fluid or maintain the separation of microorganisms from the fluid, wherein said bone char and said activated charcoal are each present in amounts of about 42.5 wt %, and said binder is present in an amount of about 15 wt %, based upon the total weight of said purification material.

25. The purification material of claim **20**, wherein said additional adsorptive material comprises an ion-binding material selected from the group consisting of synthetic ion exchange resins, zeolites, and phosphate minerals.

26. The purification material of claim **25**, wherein the phosphate minerals are members of the phosphate class of minerals.

27. The purification material of claim **25**, wherein the phosphate minerals are members of the apatite group of minerals.

28. The purification material of claim **25**, wherein the synthetic ion exchange resins are functionalized styrenes, vinylchlorides, divinyl benzenes, methacrylates, acrylates, and mixtures, copolymers, and blends thereof.