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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) **Title:** METHOD FOR KEEPING A SURFACE, OBJECT AND/OR INSTALLATION FREE OF PATHOGENS

(57) **Abstract:** Method for keeping a surface, object and/or installation free from pathogens, characterised by the fact that non-pathogenic bacteria strains are applied to the surface or similar concerned.

Method for keeping a surface, object and/or installation free of pathogens

The invention relates to a method for keeping a surface, object and/or installation free of pathogens.

It is known that objects, for example mattresses of hospital beds or the like, must be regularly cleaned and disinfected.

Surfaces like the walls and floors in hospitals and industrial kitchens, as well as installations for example, for preparing foodstuffs or feeds, must be regularly cleaned and disinfected.

As is known chemical or biological cleaning products are used for such cleaning, after which the object, surface or similar concerned is disinfected, for example using alcohol, sodium hypochlorite or other known disinfectants.

A drawback of the aforementioned known disinfectants is that they evaporate and degrade relatively quickly and as a result of which their effectiveness is extremely limited in time.

As a result of their limited operation in time, it is clear that a new disinfectant is required in relatively short time periods as a result of which the cost for disinfecting may be significant.

Another drawback is that there is a risk that pathogenic bacteria become resistant to one or more disinfectants, as a result of which these products lose their effectiveness.

This invention intends to provide a solution to one or more of the aforementioned and other drawbacks.

Consequently the invention relates to a method for keeping a surface, object and/or installation free of pathogens, in which non-pathogenic bacteria strains are applied to the surface or similar concerned.

An advantage of this invention is that, when an object, surface and/or installation is colonised by non-pathogenic bacteria strains, the sources of food for undesirable bacteria is decimated, as a result of which unwanted bacteria that come into contact with the object or similar, have little or no sources of food available and are consequently suppressed, so that they cannot or can only slowly develop and divide and so that a possible infection threshold is not exceeded.

Another advantage is that the aforementioned non-pathogenic bacteria strains do not form a burden on the environment, this unlike chemical disinfectants.

This invention also relates to the use of non-pathogenic bacteria strains to keep a surface, object and/or installation free of the pathogen.

With the intention of showing the characteristics of this invention better, a few preferred methods are described below, as an example without any limitative nature, for keeping a surface, object and/or installation free of the pathogen.

In order to protect an object, surface or installation from new infections during cleaning, the object or similar is preferably cleaned first and then one or more non-pathogenic bacteria strains are inoculated onto the object or similar.

The cleaning in this can be realised using water or a detergent or even a solution of proteins that make it possible to break down any possible infection promoting substances.

Inoculating one or more non-pathogenic bacteria strains is preferably realised by breeding the various bacteria strains either separately or together in a suitable water-based solution, until they are present in this solution at the required concentration, after which the bacterial solution obtained in this way is applied to the object or similar.

This application of the bacterial solution with one or more non-pathogenic bacteria strains can be realised in various ways.
In this way the aforementioned bacterial solution can be sprayed onto the object or similar, which is, for example, particularly suitable for cleaning and keeping mattresses free from pathogens.

Other methods for applying the bacterial solution onto an object or similar include, for example, the application of a foam of the said bacterial solution onto the object or the use of the bacterial solution in known installations for cleaning floors and/or walls.

It is clear that use can be made for the aforementioned methods to existing atomizers or existing foam equipment.

The aforementioned bacteria strains, shall hereby colonise the cleaned object or similar, for which the bacteria will consume the nutrients on the object or similar concerned and compete in this way with any other bacteria that could possibly cause infections.

Because the bacteria inoculated on the object are present in large numbers, this can prevent other, possibly dangerous, bacteria multiplying quickly and exceeding a possible infection threshold, whereby the use of disinfectants becomes unnecessary.

It should be noted that the aforementioned bacteria strains should preferably be selected from a list of organisms that are generally accepted as being safe for humans.

Examples of such bacteria strains are: Bacillus amyloliquefaciens; Bacillus subtilis; Bacillus licheniformis; Bacillus pumilus; and Bacillus megaterium.

Finally it should be noted that cleaning and disinfecting an object or similar in a single step is possible, more specifically by adding the aforementioned bacterial solution of the bacteria strains to cleaning products, like protein mixtures.

The methods described above according to the invention are not in any way limited to the examples described above, but keeping a surface, object and/or installation free from pathogens may be realised according to many different variants without falling outside the framework of this invention.

CLAIMS

1. – Method for keeping a surface, object and/or installation free from pathogens, characterised by the fact that non-pathogenic bacteria strains are applied to the surface or similar concerned.

2. – Method according to conclusion 1, characterised by the fact that the aforementioned bacteria strains colonise the aforementioned surface, object or said installation.

3. – Method according to one of the conclusions above, characterised by the fact that a cleaning product is added to one of the aforementioned bacteria strains.

4. – Method according to one of the conclusions above, characterised by the fact that bacteria strains are applied to the surface or similar in a state dissolved in a liquid.

5. – Method according to conclusion 4, characterised by the fact that the said solution of bacteria strains is sprayed over the surface or similar.

6. – Method according to one of the conclusions above, characterised by the fact that the object is a mattress.

7. – Method according to conclusion 4, characterised by the fact that the said solution of bacteria strains is applied to the surface or similar in a foam form.

8. – Method according to one of the conclusions above, characterised by the fact that the aforementioned non-pathogenic bacteria strains are selected from a list of bacteria strains recognised as being safe for humans.

9. – The use of non-pathogenic bacteria strains for keeping a surface, object and/or installation free from pathogens.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61L2/16 A61L2/18 D06M16/00 C11D3/38 A01N63/00
ADD. A61L101/52

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61L D06M C11D A01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/056096 A (LIFE SCIENCES TGO, SRL; FREDENBURGH, JEFFREY, KENT; CORDICK, RAE, ANNE) 10 July 2003 (2003-07-10) page 6, line 12 - page 9, line 32 page 15, line 5 - line 25 page 20, line 8 - line 12	1-9
X	WO 97/25865 A (SYBRON CHEMICAL HOLDINGS, INC) 24 July 1997 (1997-07-24) the whole document	1-5,8,9
X	WO 02/33035 A (3840158 CANADA INC; TEASDALE, STEVE; LAFRANCE, CORINNE) 25 April 2002 (2002-04-25) the whole document	1-4,8,9

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

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Name and mailing address of the ISA/	Authorized officer
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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