

FREEZER FOR BIOSANITARY AND CYTOTOXIC WASTE

FIELD OF THE INVENTION

5 The object of the present invention is a freezer
for biosanitary and cytotoxic waste of the type used in
hospitals, or for the transportation of such waste to
incineration plants, using refrigeration means that are
able to delay the degradation of such waste;
10 incorporating as a novelty, an air purifier by titanium
dioxide photocatalysis to cancel out the emissions of
particulate contaminants produced by the waste contained
in its interior.

BACKGROUND OF THE INVENTION

Different designs of refrigerators for
biosanitary and cytotoxic waste are known. For example,
the one shown in Spanish utility model ES 1062531 U,
20 published on 1 July 2006, which comprises a front door
that allows insertion and removal of a container where
the waste is deposited, an upper door to pour the waste
into the container. The refrigerator has respective
coils arranged on the side walls and rear wall, as well
25 as a thermostat that regulates the temperature inside
the refrigerator.

These known refrigerators have the disadvantage
that, when opening either the upper door or the front
30 door, both chemical and biological particulate
contaminants are emitted to the outside environment
together with the air stream coming from the interior of
the refrigerator.

35 For this reason, a freezer for biosanitary and

cytotoxic waste needs to be designed, which is able to simply and economically solve the disadvantage of the aforementioned prior art.

5 **DESCRIPTION OF THE INVENTION**

The present invention is established and characterised in the independent claims, while the dependent claims describe additional features thereof.

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The object of the invention is a freezer for biosanitary and cytotoxic waste. The technical problem to solve is how to prevent the emission of particulate contaminants to the outside environment, when opening a door of the freezer.

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An advantage of the invention is that it manages to effectively provide a solution to the technical problem addressed, as the arrangement of the air purifier at the outlet of the freezer door, enables treatment of the stream of air coming from the inner space of the freezer when any of its doors has been opened, thus avoiding the emission of both chemical and biological particulate contaminants to the outside environment.

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BRIEF DESCRIPTION OF THE FIGURES

This specification is complemented with a figure that illustrates the preferred example of the invention, in no way intended to limit the scope thereof.

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Figure 1 shows a perspective view of the freezer for biosanitary and cytotoxic waste.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

5 This invention is a freezer for biosanitary and cytotoxic waste.

As shown in figure 1, the freezer comprises:

- an inner space (1), which houses a waste container (2),
- 10 - a front door (3), through which the waste container (2) in the inner space (1) is inserted/removed,
- an upper door (4), through which the waste is poured into the inner container (2),
- 15 - cooling means (7) and temperature control means (not shown in the figure) of the inner space (1).

For example, the cooling means (7) may comprise respective coils (not shown in the figure) arranged on
20 the side walls and rear wall of the freezer; and, the temperature control means may be a thermostat (not shown in the figure) that regulates the temperature in the inner space (1) of the freezer between 0°C and -25°C.

25 Likewise, the freezer comprises an air purifier (5) that treats an air stream coming from the inner space (1). The air purifier (5) may be arranged on the outside of the freezer, for example, on one of its sides.

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Preferably, the air purifiers (5) comprises an upper air inlet (5.1), oriented towards the upper door (4); similarly, it may comprise a front air inlet (5.2), oriented towards the front door (3) of the freezer.

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Likewise, it is preferred that the air purifier (5) is put into operation when opening the upper door (4) or the front door (3). Being preferred that the upper door (4) or the front door (3) open by operating an accessible pedal (6), either at the front of the freezer or at one of its sides.

The air purifier (5) may comprise impeller means, for example, a fan (not shown in figure), that drag the air stream coming from the inner space (1) towards the air purifier (5), when the upper door (4) or front door (3) of the freezer is opened. At the same time, such impeller means transfer the air stream with particulate contaminants through the interior of the air purifier (5), between the upper air inlets (5.1) or front air inlets (5.2), and a purified air outlet (5.3).

On the other hand, it is preferred that the air stream coming from the inner space (1) is treated in the air purifier (5) by photocatalysis, for example, using titanium dioxide (TiO_2) as photo-catalyst. For this purpose, the air purifier (5) may comprise in its interior a matrix of titanium dioxide (TiO_2) (not shown in the figure) irradiated by ultraviolet (UV) lamps (not shown in the figure). The air stream transferred between the inlets (5.1, 5.2) and the outlet (5.3) of the air purifier (5) flows through the irradiated matrix.

In passing through the air purifier (5), the air stream with particulate contaminants, coming from the inner space (1) of the freezer, is converted into purified air at the outlet of the air purifier (5), cancelling out the emission to the outside environment of both chemical and biological particulate contaminants, which come from the biosanitary and

cytotoxic waste in segregation phase contained in the container (2) of the inner space (1) of the freezer.

5 The cleaning of the air stream occurs when the
accompanying particulate contaminants "oxidise" by
contact with the hydroxyl radicals and superoxide ions
formed when the titanium dioxide (TiO_2) absorbs the
photons coming from the ultraviolet (UV) lamps, until
managing to completely reduce these particulate
10 contaminants to carbon dioxide (CO_2) and water vapour;
obtaining as a result purified air suitable to be
emitted to the outside environment, without risk of
contamination thereof.

CLAIMS

1.-Freezer for biosanitary and cytotoxic waste, comprising:

- 5 - an inner space (1), which houses a waste container (2),
 - a front door (3), through which the waste container (2) in the inner space (1) is inserted/removed,
10 - an upper door (4), through which the waste is poured into the inner container (2),
 - cooling means (7), and
 - inner space (1) temperature control means,
 characterised in that comprising an air purifier (5)
15 that treats an air stream coming from the inner space (1).

2.- Freezer according to claim 1, wherein the air purifier (5) is arranged on the outside of one of the
20 freezer sides.

3.- Freezer according to claims 1 or 2, wherein the air purifier (5) comprising an upper air inlet (5.1) oriented towards the upper door (4).
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4.- Freezer according to claims 1 or 2, wherein the air purifier (5) comprising a front air inlet (5.2) oriented towards the front door (3).

30 5.- Freezer according to claim 1, wherein the air purifier (5) is put into operation when opening the upper door (4) or the front door (3).

6.- Freezer according to claim 1, wherein the upper
35 door (4) or the front door (3) open by operating a pedal

(6) .

7.- Freezer according to claim 1, wherein the air purifier (5) treats air stream coming from the inner
5 space (1) by photocatalysis.

8.- Freezer according to claim 7, wherein the photocatalyst used in the photocatalysis is titanium dioxide (TiO₂) .
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9.- Freezer according to claim 8, wherein the air purifier (5) comprises a matrix of titanium dioxide (TiO₂) irradiated by ultraviolet (UV) lamps.

15 10.- Freezer according to claim 1, wherein the air purifier (5) comprises air stream impeller means.