Abstract: The present invention is drawn to methods and compositions for use in partially or fully decontaminating surfaces which have been contaminated with chemical or biological warfare agents as well as to methods for treating viral infections, bacterial infections, fungal infections, and cancerous tissue. The invention includes the use of a peroxyn containing transition metal containing composition. In one embodiment, the composition includes an aqueous vehicle of water and from 0.001 wt% to 40.0 wt% of a peroxyn. Additionally, the composition can include from 0.001 ppm to 50,000 ppm by weight of a transition metal based on the aqueous vehicle content. Optionally, an alcohol can be included in the composition. In one embodiment, the transition metal can be in the form of a colloidal transition metal, such as colloidal silver.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC: A61K 9/00(2006.01)

USPC: 424/400
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)
U.S.: 424/400

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 practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the international search: 26 August 2008 (26.08.2008)

Date of mailing of the international search report: 09 SEP 2008

Name and mailing address of the ISA/US
Mail Stop PCT, Attn ISA/US
Commissioner for Patents
P.O. Box 14
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer:
SHERIDAN R. MACAULEY
Telephone No. (571) 272-7222

Form PCT/ISA/210 (second sheet) (April 2007)
### DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category *</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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</table>
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

<table>
<thead>
<tr>
<th>Claim Nos.</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>because they relate to subject matter not required to be searched by this Authority, namely:</td>
</tr>
<tr>
<td>2</td>
<td>because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:</td>
</tr>
<tr>
<td>3</td>
<td>because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).</td>
</tr>
</tbody>
</table>

This International Searching Authority found multiple inventions in this international application, as follows:

<table>
<thead>
<tr>
<th>No.</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.</td>
</tr>
<tr>
<td>2</td>
<td>As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.</td>
</tr>
<tr>
<td>3</td>
<td>As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: Please See Continuation Sheet</td>
</tr>
<tr>
<td>4</td>
<td>No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:</td>
</tr>
</tbody>
</table>

**Remark on Protest**

- The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.
BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-31, drawn to a method of treating a subject for viral infection.

Group II, claim(s) 32-62, drawn to a method of treating a subject for bacterial infection.

Group III, claim(s) 63-92, drawn to a method of treating a subject for fungal infection.

Group IV, claim(s) 93-121, drawn to a method of treating cancerous tissue.

Group V, claim(s) 122-170, drawn to a method of decontaminating a surface contaminated with a chemical or biological warfare agent.

The inventions listed as Groups I through V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The technical feature that is common to the groups is an aqueous composition comprising (a) and aqueous vehicle, including: (i) water, and (ii) from 0.0001 wt% to 10.0 wt% of a peroxygen; and (b) from 0.0001 wt% to 10.0 wt% of a peroxygen; and (b) from 0.0001 ppm to 50,000 ppm by weight of a transition metal or allow thereof based on the aqueous vehicle content. However, such a composition was known at the time of the invention. Elabunde, et al. (US Pat. 2,304,104, 1938) teaches an aqueous composition comprising 1% perozone (10 grams sodium perozone) and zinc within the claimed range (18 grams per liter zinc chloride; see p. 2, col. 2, lines 64-75). Therefore, there is no special technical feature common to the groups that makes a contribution over the prior art.

This application contains claims directed to more than one groups of more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

A. For the inventions of Groups I through V, election is required of the various species of alcohols recited in claims 11-12, 42-43, 73-74, 103-104, and 139-144. Applicant may elect methanol, ethanol, propanols, butanols, pentanols, a specific mixture thereof, or a polyhydric alcohol.

B. For the inventions of Groups I through V, election is required of the various species of transition metals or alloys thereof recited in claims 13-17, 44-48, 75-79, 105-109, and 145-152. For example, applicant may elect ruthenium (recited in claim 13), gold (recited in claim 13) a colloidal transition metal (recited in claim 14), colloidal silver (recited in claim 15) or an ionic transition metal-(recited in-claim-17).
C. For the inventions of Groups I through V, election is required of the various species of peroxycarbons recited in claims 19-22, 50-53, 81-84, 111-114, 154-157, and 161-170. For example, applicant may elect peroxyformic acid (recited in claim 19), peroxybenzoic acid (recited in claim 19), a peroxide (recited in claim 21) or a peracid and a peroxide (recited in claim 22).

D. For the invention of Group I, election is required of the various species of viral infections recited in claims 27-30. For example, applicant may elect HTLV infection (recited in claim 27), yellow fever (recited in claim 27), small pox (recited in claim 28), or human papaloma virus (recited in claim 30).

E. For the invention of Group II, election is required of the various species of bacterial infections recited in claims 59-61. For example, applicant may elect Yersinia pestis (recited in claim 59), serrate infection (recited in claim 59), methicillin resistant staphylococcus aureus (recited in claim 60) or anthrax (recited in claim 61).

F. For the invention of Group III, election is required of the various species of fungal infections recited in claims 89-92. For example, applicant may elect mycetoma (recited in claim 89), a yeast infection (recited in claim 90), a vaginal infection (recited in claim 91) or a skin infection (recited in claim 92).

G. For the invention of Group IV, election is required of the various species of cancerous tissues recited in claims 119-121. Applicant may elect dermal cancer (recited in claim 119), prostate cancer (recited in claim 120) or an internal cancer (recited in claim 121).

H. For the invention of Group V, election is required of the various species of surfaces recited in claims 123-124. For example, applicant may elect a metal (recited in claim 124), plastic (recited in claim 124) or human skin (recited in claim 123).

I. For the invention of Group V, election is required of the various species of chemical or biological warfare agents recited in claims 126-129. For example, applicant may elect a chemical agent (recited in claim 126), arsines (recited in claim 127), a biological agent (recited in claim 128), or anthrax (recited in claim 129).

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: The technical feature that is common to the species is a method of applying an aqueous composition comprising (a) and aqueous vehicle, including: (i) water, and (ii) from 0.0001 wt% to 10.0 wt% of a peroxycarbons; and (b) from 0.0001 wt% to 10.0 wt% of a peroxycarbone; and (b) from 0.0001 ppm to 50,000 ppm by weight of a transition metal or allow thereof based on the aqueous vehicle content. However, such a composition was known at the time of the invention. Elabunde, et al. (US Pat. 2,304,104, 1938) teaches an aqueous composition comprising 1% peroxycarbons (10 grams sodium peroxycarbide) and zinc within the claimed range (18 grams per liter zinc chloride; see p. 2, col. 2, lines 64-75). The reference also teaches that the aqueous solutions may be applied to subjects for various purposes (p. 4, lines 16-43). Therefore, there is no special technical feature common to the groups that makes a contribution over the prior art.