



NORTH CAROLINA
Environmental Quality

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MICHAEL S. REGAN
Secretary

MICHAEL SCOTT
Director

September 24, 2019

Eric Lewis, Ph.D.
Biosafety Specialist
Department of Environment, Health and Safety
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Chapel Hill, NC 27599

Re. Chemical Treatment of Liquid Waste Containing *Fusobacterium nucleatum* using 10% Bleach - Alternative Treatment Method Approval Request

Mr. Lewis,

The North Carolina Department of Environmental Quality, Division of Waste Management – Solid Waste Section has reviewed the documentation submitted to our office, received September 23, 2019. This letter is in response to your request for approval for the use of the medical waste treatment method specified above.

The Medical Waste Management rules 15A NCAC 13B .1200 through .1207, specifically Section .1207(4)(b), references the parameters applicable to the request for the use of 10 percent bleach as a regulated medical waste treatment type. The documentation submitted explains the effectiveness of the treatment type on retroviruses and considers the other factors as stated in the Section. The alternative treatment method approval request appears to meet the required parameters and is approved.

It is the responsibility of the healthcare facility to ensure that treated regulated medical waste is non-infectious prior to disposal. Documentation describing the treatment process shall be maintained.

The Medical Waste Management rules are scheduled to be updated. It is expected that the proposed Rules will become effective January 2020. Section .1204(e) is specific to chemical treatment. The healthcare facility is encouraged to meet the requirements as stated in the proposed rule. Section .1204(h) is specific to alternative treatment but would likely not be applicable if the parameters of Section .1204(e) are met.



If you have any questions or concerns, please contact me at 919-707-8210 or John Patrone at 336-776-9673.

Sincerely,

**Adam
Ulishney**

Digitally signed by
Adam Ulishney
Date: 2019.09.24
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Adam Ulishney, Branch Head
Environmental Compliance Branch
NCDEQ, DWM-Solid Waste Section

ec: John Patrone-Solid Waste Section
Ed Mussler-Solid Waste Section





Request for Approval

Chemical Treatment of Liquid Infectious Waste

Approval for chemical treatment of liquid infectious waste must be obtained from the NC Division of Waste Management. Please provide answers to the following questions, attach supporting documents as outlined below, and submit your request to EHS Biosafety Group, CB #1650. EHS will submit your request to the NC Division of Waste Management.

Request for approval must be substantiated by results of demonstrated effectiveness of the chemical to treat the specific microbiological agent(s) of concern for the waste disposed.

I. Description of infectious waste

a. Describe waste to be treated (i.e. cultures, cell lines):

Fusobacterium nucleatum in culture medium or in PBS

b. Organisms present:

Fusobacterium nucleatum

c. Estimated concentration/titer of organisms:

Maximum of 10^9 CFU

d. Other material present in waste (i.e. other organic material):

Broth (culture medium) or phosphate buffer.

e. Volume of waste and frequency:

20 mL per week

II. Description of treatment procedures

a. Summarize proposed procedure for treating waste: b. Disinfectant to be used (please attach MSDS):

i. Bleach

c. Disinfectant concentration:

i. 10%

d. Ratio of disinfectant (ml) to liquid waste (ml):

1 ml bleach to 9 ml waste

e. Contact time of disinfectant with liquid waste prior to disposal:

30 min

f. Small variations in temperature, time, pH, concentration and state of dispersion, penetrability, reactivity of organic material may make large differences in the effectiveness of disinfection. List the factors that may affect disinfection:

Concentration

State of dispersion



III. Verification of efficacy of treatment procedures

- a. Submit results of experiments that verify the proposed procedures are effective.

Such studies may include attempts to recover and quantitate the agent from liquid or swab samples, or sealed patches, by animal inoculation, plaque assay, agar or broth cultivation and similar methods, following controlled decontamination under the same experimental conditions envisioned for proposed studies.

Reports of these studies should be provided with this document in support of your request.

Please see publications

- b. Please attach any publications that will support the use of this disinfectant under the proposed conditions. These publications cannot be provided in lieu of the experiments described above unless the publication describes the same treatment procedures for the infectious waste described in Section I (including concentration of organism, organic material present, type of waste, organisms).

Publications have studied the disposal of *F. nucleatum*. One wide-ranging review looked at a number of disinfectants, and found that 10% bleach was able to clear 5 logs of bacteria within 5 minutes. Tel Aviv University disinfects areas that came into contact with *F. nucleatum* with 0.5% bleach for 30 minutes, and lists 1% bleach as a method for decontamination. *Fusobacterium* can be inactivated by UV light with a wavelength 254nm, and is also susceptible to moist heat of 121°C for at least 15 minutes and dry heat of 170°C for at least 1 hour. However, we lack access to waste autoclaves and therefore require chemical decontamination.

IV. Appendix