Algoma
PUBLIC HEALTH
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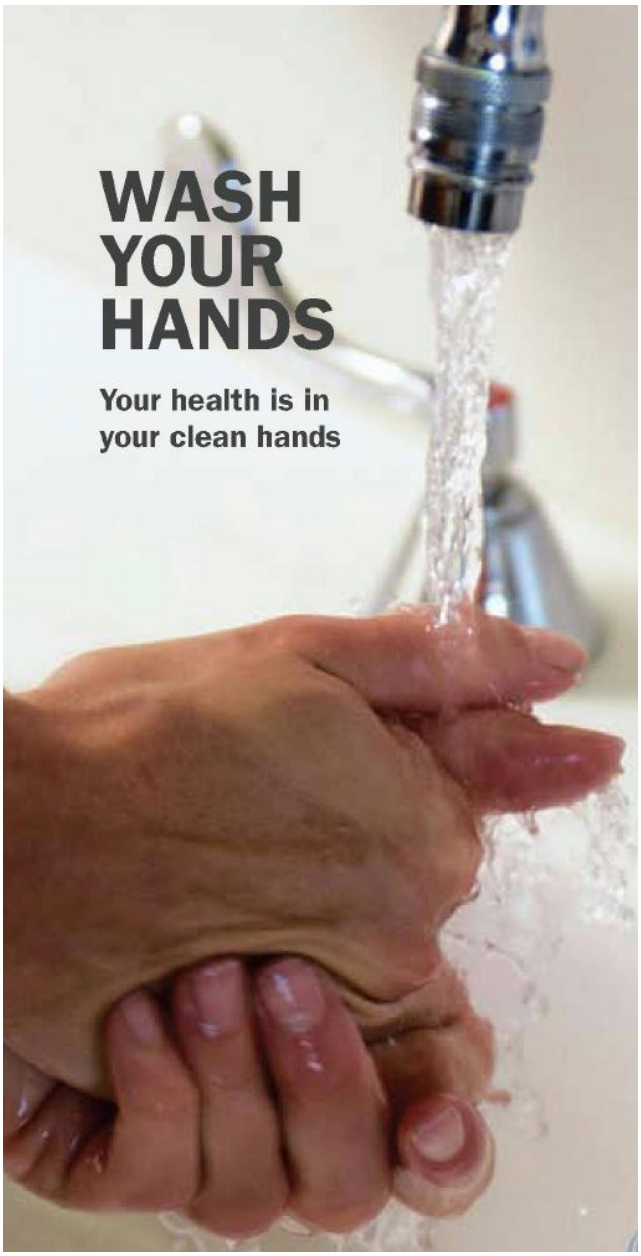
HANDWASHING LESSON PLAN



GRADES 5 - 8

May
2011

Title: Down with Germs

Target Group: Grades 5 to 8

Ontario Provincial Curriculum Strand: Healthy Living

Strand Component: Growth and Development

Specific Expectations:
1. Describe the increasing importance of personal hygiene following puberty.

Time: 60 minutes

Background Information –
- Introduction – Handwashing Teaching Toolkit

Key Teaching:
Learning Objectives
- Activity #1 Use Glo Germ
- Activity #2 Growing Micro organisms
- Activity #3 The Spread of Germs Game
- Activity #4 Coughing and Sneezing in Your Sleeve

Resources

- Posters

  1. Handwashing Steps

  2. Wash Your Hands Lavez-vous les mains

  3. Be a Germ Stopper combattons les germes

- On-Line Video: "Why Don't We Cough In Our Sleeve?"
- Material Safety Data Sheet - Glo Germ Liquid
- Material Safety Data Sheet - Ultraviolet Black Light
- Resources Available from Algoma Public Health
- Websites for Teachers
- References

Handwashing Teaching Toolkit

Objective:

To teach elementary school youth the importance of handwashing, including how and when to wash their hands.

Background information:

Bacteria are everywhere. There are more bacteria on one's body than there are people in Canada. Bacteria, like people, can be either good or bad. There are bacteria that live on the skin and are usually not harmful. But hands can gather all kinds of bacteria with each job they do. We can't see individual bacteria without using a microscope.

Why teach handwashing?

Prevention is the best intervention. Addressing the spread of germs in schools is essential to the health of our youth, our schools, and our community. Proper handwashing is inexpensive and the most effective way to prevent the spread of germs. It is important for students of all ages to know when and how to properly wash their hands.

While commitment to handwashing means commitment of time and supplies, the cost of NOT washing our hands are far greater than the cost of washing our hands. Despite its' simplicity, handwashing is no laughing matter. Nearly 22 million school days are lost due to the common cold and other infectious diseases (CDC 1996). It's not surprising when you think about it, because school is all about sharing: desks, books, pens, food, bathrooms, door handles, water fountains, computer mice, and keyboards. Touching them results in germs.

A study of 305 Detroit school children showed that handwashing at least four times a day reduced absenteeism by 24 – 50%.

Clean hands are all about good health for students, volunteers, teachers, administrators, and the entire school community.

What are some ways to teach children good handwashing technique?

You cannot avoid collecting germs, but you can reduce the chance of infecting others by knowing when hands should be washed. It is important to encourage and help children to wash their hands before eating, after playing outdoors or playing with pets, after using the washroom, after coughing or sneezing, after blowing their noses and whenever their hands look, feel or smell unclean. Even though hands may appear to be clean, they may carry germs capable of causing disease.

Don't assume children know how to wash their hands properly. Supervision, especially at home and in school settings, is an essential element in forming good handwashing habits in children. Children learn by example. Let them learn good handwashing technique from observing you.

How to wash hands: (Refer to "Be a Germ Stopper" poster)

1. Wet hands with warm water
2. Use liquid soap
3. Lather for at least 20 seconds
4. Rub palms together, scrub the back of hands, wrists and thumbs, and between the fingers and under the fingernails (keep fingernails short) The mechanical action of handwashing – rubbing your hands together with soap and water – breaks down the tiny bits of grease, fat and dirt on your hands that bad germs cling to. Soap doesn't actually kill the bad germs. Instead it's the combination of soap, rubbing, rinsing, and drying that help these germs slide off hands.
5. Rinse well with water to remove all lather
6. Dry hands well using a paper towel
7. Turn off tap with paper towel, not with your clean hands

Other ways to get hands clean:

When handwashing facilities and equipment are not available, alcohol-based hand rinses, gel sanitizer, or alcohol hand wipes containing at least 60% alcohol can be used as an alternative, as long as hands are not visibly soiled. When using gels rub hands until the gel is dry. The gel doesn't need water to work: the alcohol in it kills the germs on your hands. Young children should be supervised when using alcohol-based products.

Things to avoid:

1. Avoid using single wash cloths and towels to wash a group of peoples' hands
2. Avoid using a standing basin of water to rinse hands

Cuts and Dryness

Observe hands for cuts and signs of dryness. Cuts should be covered and hand lotion should be used to prevent dryness. Germs enter the body through cuts and dry skin.

Contents of Handwashing Toolkit:

1. Lesson plan
2. Activity sheets
3. Posters
4. Book and website resource list for teachers
5. Glo Germ lotion and UV light
6. The War on Germs (10-minute video)

This toolkit has been adapted from the "Down With Germs – Wash Germs Down the Drain" educational kit developed by Wellington – Dufferin - Guelph Public Health Unit.

GRADE 5 TO 8 LESSON PLAN

Learning Objectives

- ☐ Understand the difference between various types of microorganisms such as viruses and bacteria.
- ☐ Know the different ways, or routes of transmission, that illness and disease can be spread.
- ☐ Identify and discuss common childhood illnesses and diseases and methods of prevention.
- ☐ Describe components of the body's system of defense against infections.

General Information

- Germs are so small that you cannot see them and they can be found almost everywhere. They are also called micro organisms, which mean that they are too small to be seen without the help of a microscope.

- There are 229,000 germs per square inch on frequently used faucet handles, 21,000 germs per square inch on work desks (400 times more than the average toilet seat) and 1,500 on each square cm of hands.

- There are many types of microorganisms, including bacteria and viruses.

- Some bacteria and viruses cause illnesses and diseases. Some are naturally occurring, do not make people sick and may actually be beneficial to a persons health. Examples of beneficial bacteria are ones used to make yoghurt and cheese. People also have beneficial bacteria in their gastrointestinal tracts (intestines – guts) that help them digest food.

- Microorganisms that cause illnesses and diseases are referred to as "pathogenic".

- Some illnesses and diseases that are caused by bacteria and viruses can be harmful and have serious complications.

- Some examples of illnesses and diseases caused by bacteria and viruses are: upper and lower respiratory tract infections, influenza, hepatitis A and B, HIV/AIDS and Salmonellosis. (See Handout: What Germs Are On Our Hands?)

- Microorganisms can be spread 4 ways, (routes of transmission). These are:
    1. Fecal oral or (contaminated with feces) hand-to-mouth contact (i.e., Salmonella, Hepatitis A). Hands are the most exposed part of the body to germs.
    2. Directly or through close contact by sharing personal items (i.e., lice).
    3. Blood contact (i.e., HIV/AIDS, Hepatitis B).
    4. Respiratory or airborne contact (i.e., influenza and colds).

- Washing with soap and water removes microorganisms from your hands and washes them down the drain. Handwashing reduces the number of microorganisms that are on your hands. Reducing the number of micro-organisms on your hands makes it less likely for them to cause an infection or be spread to others.

- Washing your hands properly and often can prevent the spread of many illnesses and diseases.

How to Wash Your Hands

1. Wet hands with warm water.
2. Use soap. It's best to use liquid soap.
3. Lather for at least 20 seconds.
4. Remember to scrub the back of hands, the thumbs, between the fingers and under the fingernails.
5. Rinse with water to remove all lather.
6. Dry hands well using a paper towel.
7. Turn off tap with paper towel – not with your bare hands.

Lathering with soap helps to lift dirt and germs off hands so they can be rinsed down the drain. However, if there is no soap, going through the action of handwashing will still help to remove some germs from your hands.

When to Wash Your Hands

- Before eating, drinking or preparing food.
- After using washroom facilities.
- After playing outside or with animals.
- After visiting someone who is sick
- After touching money, raw meat, poultry or fish.
- After coughing, sneezing or blowing your nose.
- After handling garbage.
- If hands look or feel dirty.

Activities

Select one or several activities provided to reinforce proper handwashing.

Book Selection

The Germ Gang Activity Book by Marjorie Cooke: Grades 4 - 6
Germs Make Me Sick by Melvin Berger: Grades 4 - 6
Germs by Ross Collins: Grades 4 - 6

Video Selection

The War on Germs: 10 minutes – Grades 4 - 8

ACTIVITY #1: GLO GERM

Description

Demonstrate to students that germs can be on their hands although they cannot be seen. The Glo Germ lotion is rubbed on hands and disappears as it is rubbed in. The lotion simulates germs that hide (seen under Glo Germ UV light) after hands are washed. This helps students to understand that handwashing can remove germs from hands.

Materials needed

- Glo Germ UV Light (available from Algoma Public Health)
- Glo Germ lotion (available from Algoma Public Health)
- A sink with hot and cold running water
- Liquid soap
- Paper towels
- Hand sanitizer (optional)

Method

1. Place a small amount of Glo Germ lotion into each student's hand. A pea-sized drop should be enough for small hands.

2. Have students rub the lotion all over their hands.

3. Explain that like the lotion, germs are on their hands although they cannot see them.

4. Have children place hands under the UV light (you may have to dim the lights in the room). The areas where there is Glo Germ lotion will glow orange under the light.

5. Explain to students that the orange glow reveals where germs are on their hands.

6. Have children wash hands using the proper technique and then look at their hands under the UV light again. There should be a significant reduction in the areas that glow orange.

7. Have students discuss areas that are commonly missed during handwashing, where the Glo Germ lotion continues to glow under the light. These are usually the thumbs, between the fingers and underneath the fingernails. Encourage students to pay extra attention to these areas when handwashing.

8. Explain that like germs, the lotion can be washed off using proper handwashing.

Variations with Glo Germ

1. Divide students into three groups. Put Glo Germ lotion on the hands of all students. Have one group wash with water only, the second group wash with soap and water, and the third group wash with hand sanitizer. After examining hands under the Glo Germ UV light, discuss how much cleaner hands washed with soap and water become.

2. Divide students into three groups. Put Glo Germ lotion onto the hands of all students. Have the first group wash hands and lather for 5 seconds. Have the second group lather for 10 seconds and the third group lather for 20 seconds. Compare the cleanliness of the hands of each group using the Glo Germ UV light. Discuss how lathering for a longer period of time will make hands cleaner.

3. Put Glo Germ lotion onto the hands of one student and ask that student to shake hands with five classmates. Examine the hands of the students involved in the handshakes under the UV light and discuss how the Glo Germ lotion has been transferred from the hands of the original student to the other hands. This is a representation of how germs can be transmitted from one person to another through direct contact.

   Refer to Materials Safety Data Sheet Glo Germ Liquid
   http://www.glogerm.com/msds-glogerm-liquid.pdf and

   Materials Safety Data Sheet Ultraviolet Black Light
   http://www.glogerm.com/msds-glogerm-uvlight.pdf for instructions on use.

ACTIVITY #2: GROWING MICRO ORGANISMS

Experiment A: Cultures in agar plates

Description

Students learn that microorganisms can be everywhere by making cultures on agar plates. Cultures of washed and unwashed hands are compared to show that microorganisms are everywhere and that handwashing reduces the number of bacteria on hands.

Materials Needed

- Petri dishes with nutrient agar (expired ones work and are available by contacting Public Health Laboratory in Sault Ste. Marie, Ph: 254-7132)
- Masking tape and Scotch Tape
- A marker
- Cotton swabs (Q-tips)
- A sink with hot and cold running water
- Liquid soap
- Paper towels

Method

1. Explain to students that the Petri dishes will help grow bacteria so that they can be seen without the use of a microscope.

2. Have students inoculate Petri dishes with a different bacterial source for each plate. Suggestions are:
    - **Hair** – remove hair from the head of a student and place into the dish.
    - **Cough** – hold a Petri dish 6 cm (about 3 inches) away from the mouth of a student and have him/her cough onto the plate
    - **Saliva** – place a clean cotton swab into a mouth and moisten it with saliva, rub the swab over the agar.
    - **Nose** – place a clean cotton swab into a nose and gently move it around, rub the swab over the agar.
    - **Counter** – have a student drag his/her fingers on a counter top then trace an "S" on the agar.
3. Have a student who has not washed his/her hands place fingertips (gently) in the agar.

4. Have a student wash hands properly and place fingertips (gently) in the agar of a different dish.

5. Label the bottom of each dish using the masking tape and marker.

6. Tape each dish closed by running scotch tape around the edge.

7. Place the dish in a warm dark place for three to five days. Check the dishes daily for growth. When the desired amount of bacteria growth is seen, refrigerate.

8. When bacterial growth can be seen, have students examine dishes and discuss how bacteria were present although it could not be seen.

9. Review the types of bacteria and viruses that can be found in the areas used for inoculating the dishes and the different routes of transmission that occurred when inoculating the petri dishes.

10. Compare the dishes that contained the washed and unwashed hands. Explain how handwashing reduces the amount of bacteria on hands.

11. Arrange to return used petri dishes to where they were from for proper disposal.

Experiment B: Dirty Hands on Bread Slice

Materials needed

- Preservative-free bread
- Brown paper bag
- Sandwich bags
- Permanent markers
- Water

Method

1. Ask students to touch their desk, hair, and faces with their fingers to get their hands contaminated.

2. Give each student a piece of bread or a half piece and instruct them to touch it all over with their fingers, keeping the bread flat.

3. Have students place bread slice in bag with two small drops of water. Seal shut.

4. Label with name and date.

5. Put all bread slices in a brown grocery bag and seal shut. Place in warm spot.

6. Have one piece of bread in a baggie that was untouched as a control.

7. Have students discuss and comment on results found.

Note: Takes about five days for good mould growth.

ACTIVITY #3: THE SPREAD OF GERMS GAME

Description

- Students learn that germs can be found on the hands.
- Students learn that proper handwashing can get rid of germs on the hands that may cause sickness.
- Introduce students to the ways in which germs can spread.

Materials Needed

- 14 different germ picture sets (six cards each) – (refer to "Spread of Germs Game" – fourteen germ pages)
- Paper bag
- Rubber bands

Method

1. Explain to the students that they are going to play a game called *The Spread of Germs Game*. Place a sticker on the back of one germ of each set.

2. Pass out a set of five germ picture cards to 14 students. Each of the 14 students will represent a germ. Tell students that while there are both good and bad germs, the pictures on the cards represent bad germs.

3. Place a set of 14 germ picture cards in a paper bag and set aside.

4. Tell students that they should keep the one germ card with a sticker on the back of it on their desk.

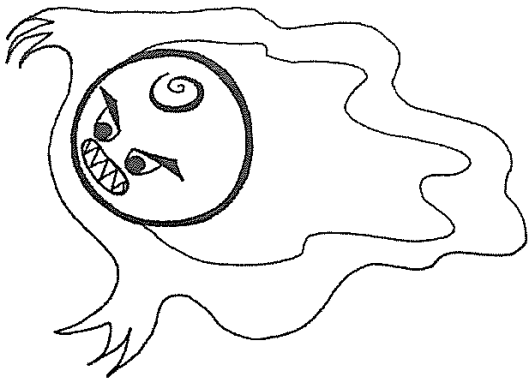
5. Explain to the class that they are going to walk around the room and trade their four remaining cards (cards without a sticker on them) with 4 other students in the class with germ cards. First, the student will shake hands with another student and then exchange or give away one card. Tell students that they do not have to trade for a different color card or a different germ; what is important, is that they trade cards with four other students.

6. Tell students that when they are finished trading, they should return to their desks and sit quietly.

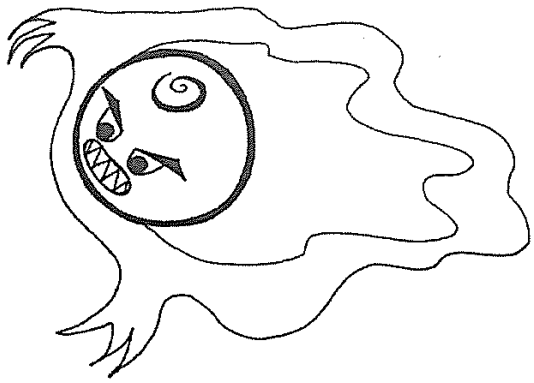
7. Once the students are in their seats again, tell students that you have all of the different types of germs in the paper bag. You are going to pull two germs out of 14 germs that were placed in the paper bag. The two germs will represent the germs of the two people in the class that did not wash their hands.

8. **Pull out two germ cards from the bag and ask the students who started out with these two germ cards to raise their hands. The correct matching germ cards will match the germ cards students have that have the matching sticker on the back of them. Ask any other students who got the germs through trading to raise their hands (anybody else who have the same germ card but without a sticker on the back of it). Count the total number of students who "got sick" from the students who started out with the two germs and did not wash their hands well.**

9. **Discuss results. Talk about how easily germs can spread from one person to another, especially from the hands. Ask students what they could have done to prevent the spread of germs.**



Chicken Pox Virus



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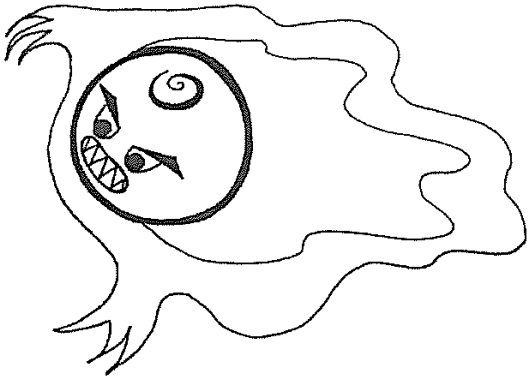

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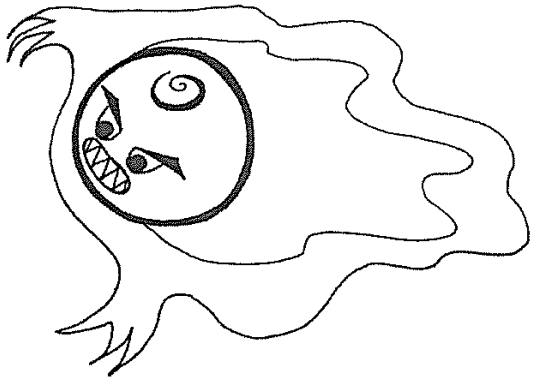

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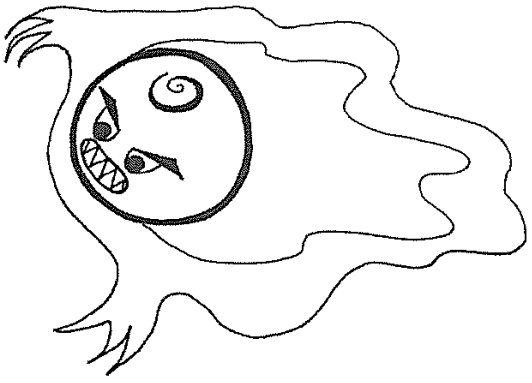

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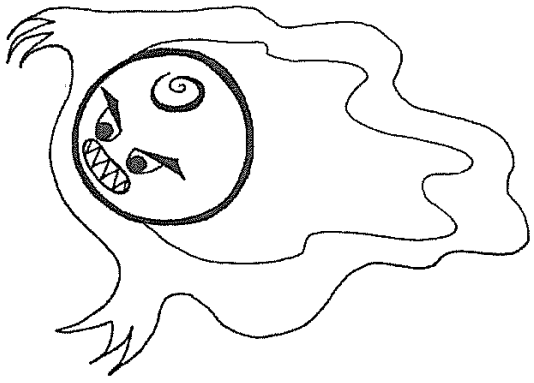

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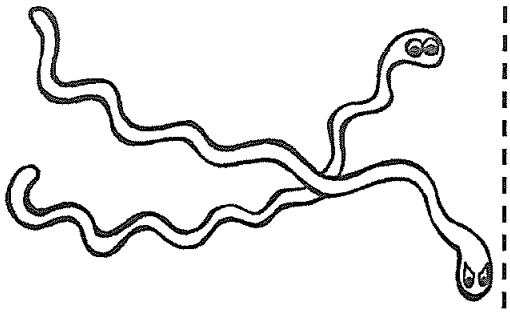
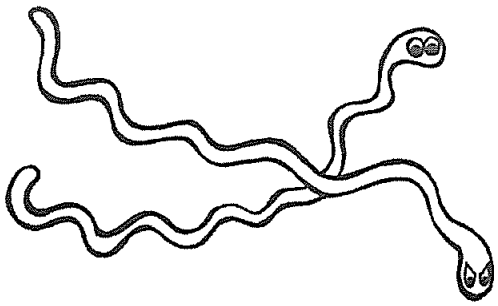


Kidney and Liver Disease



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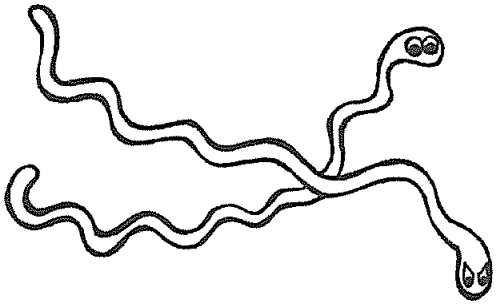

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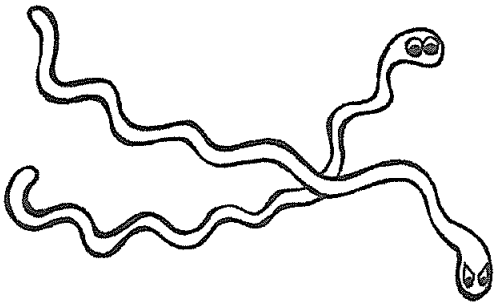

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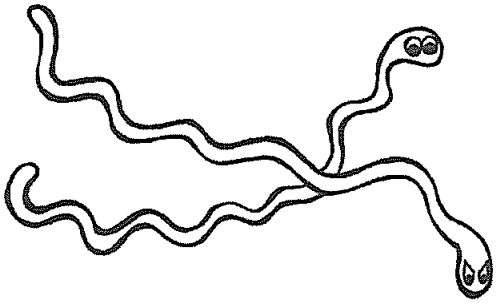

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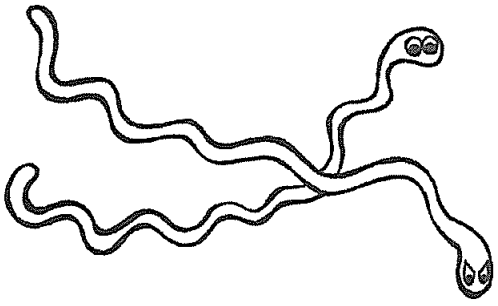

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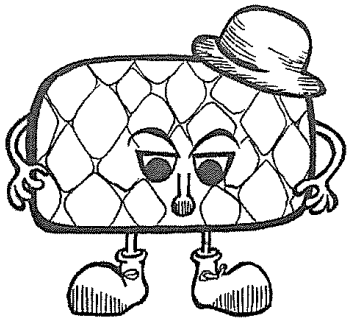
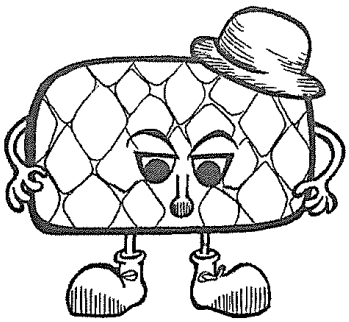


Smallpox Virus



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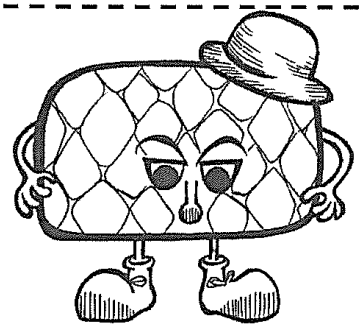

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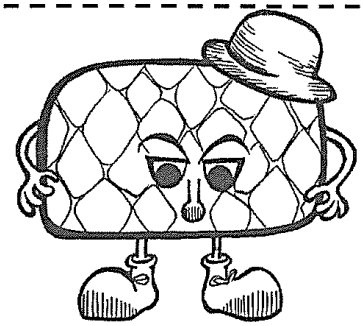

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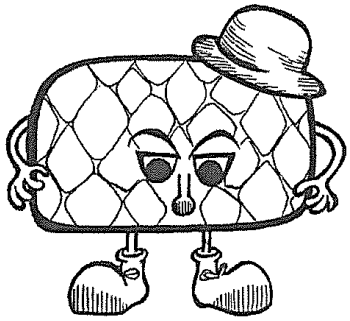

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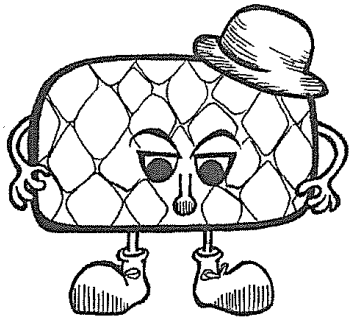

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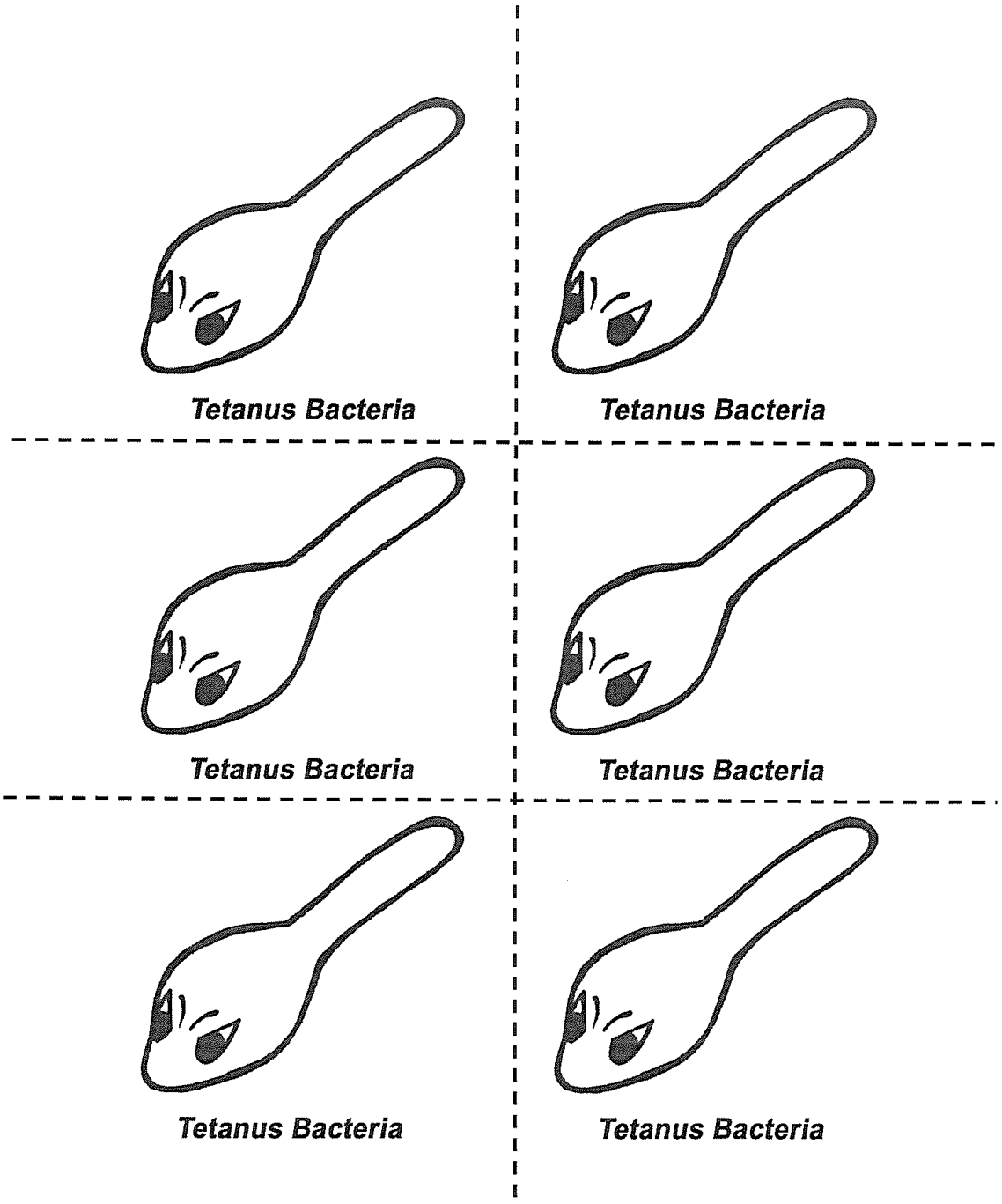

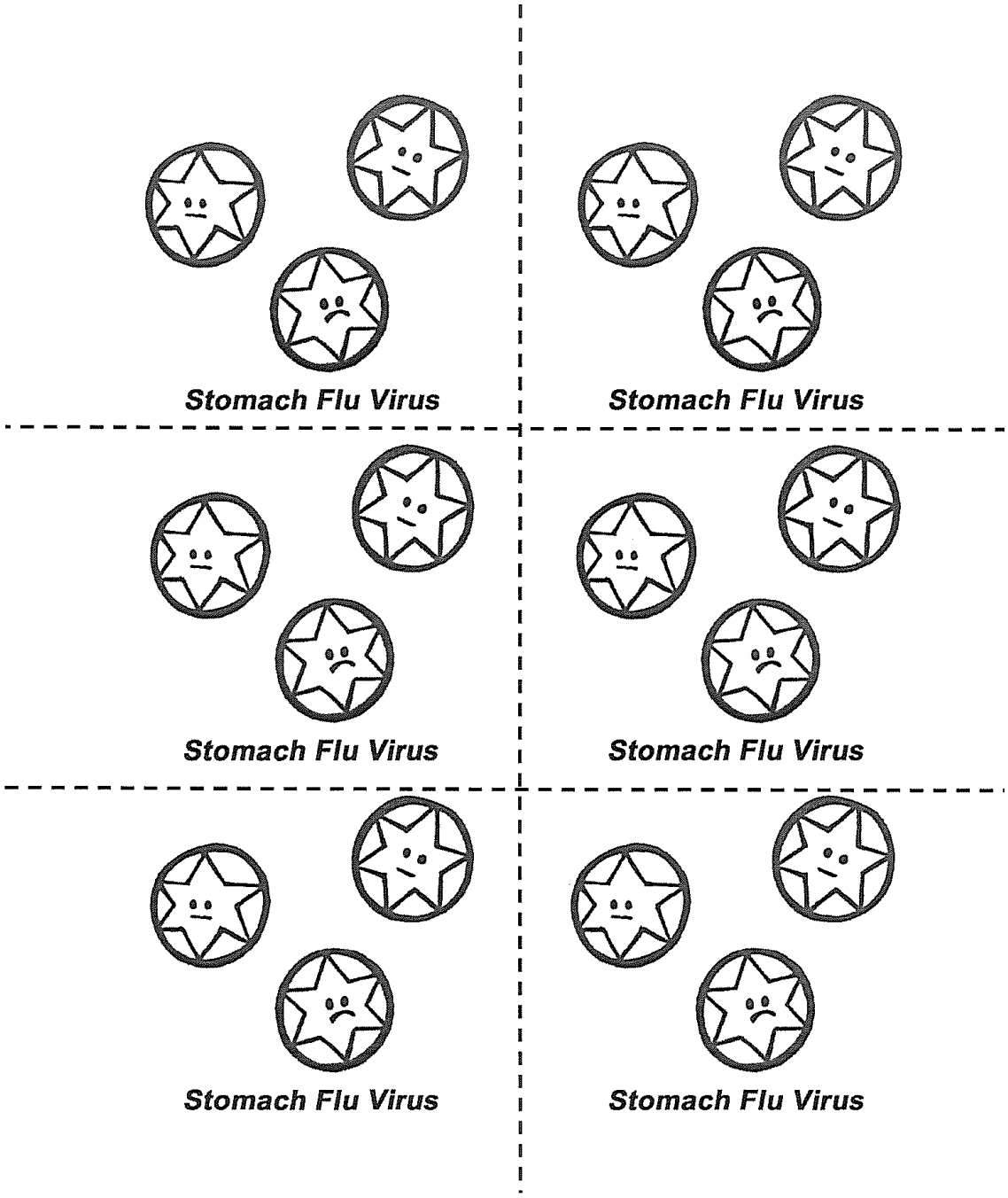

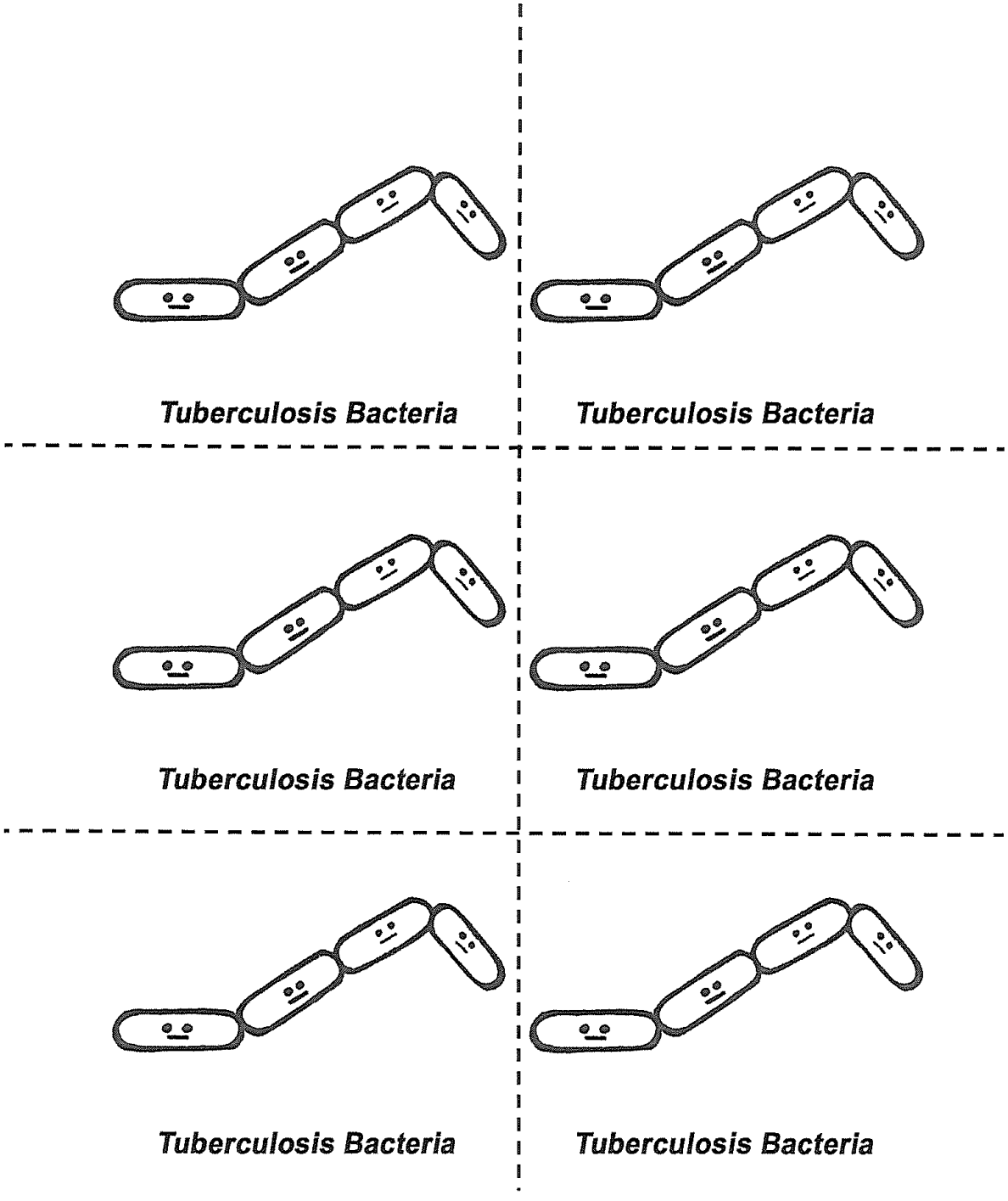

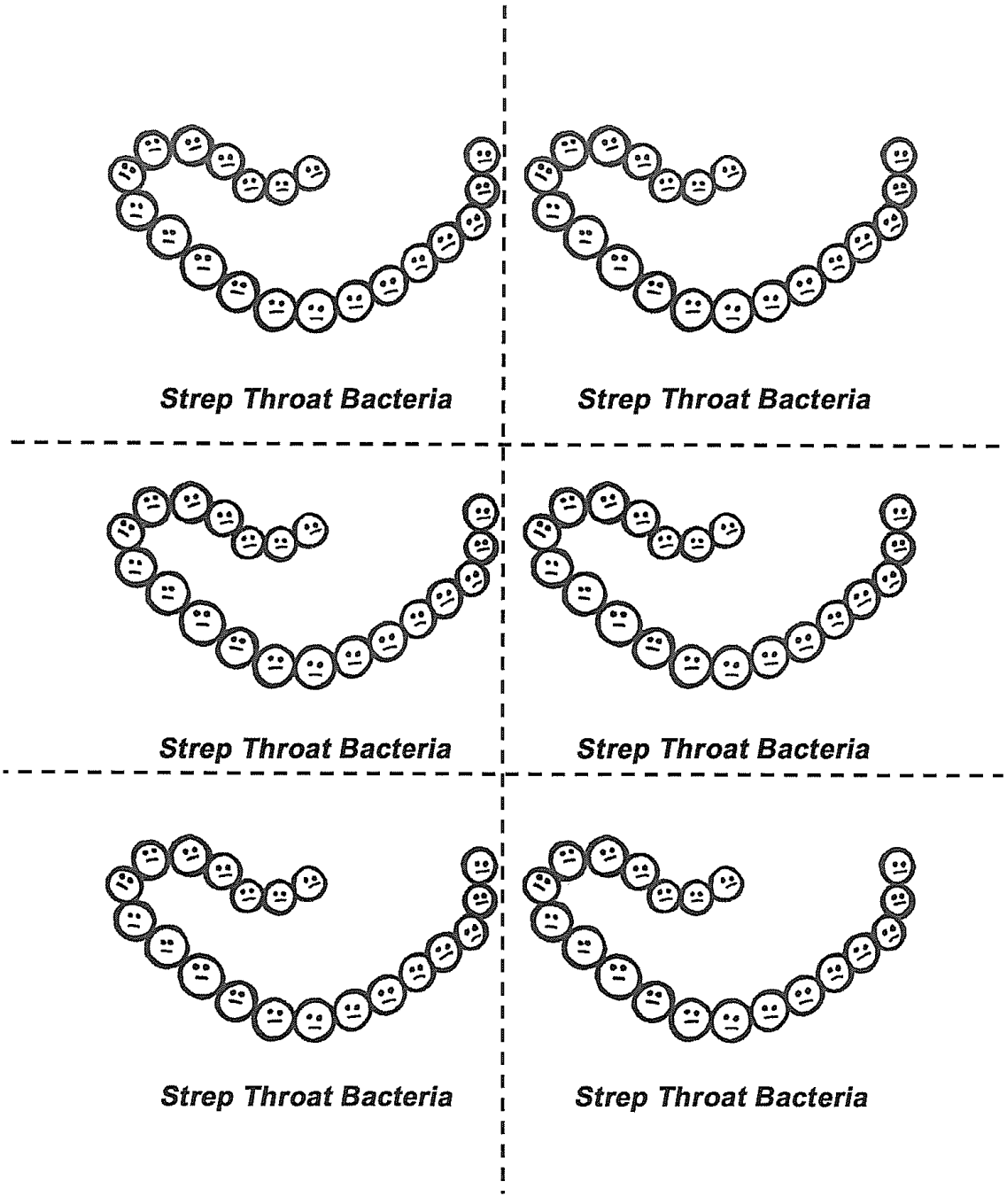

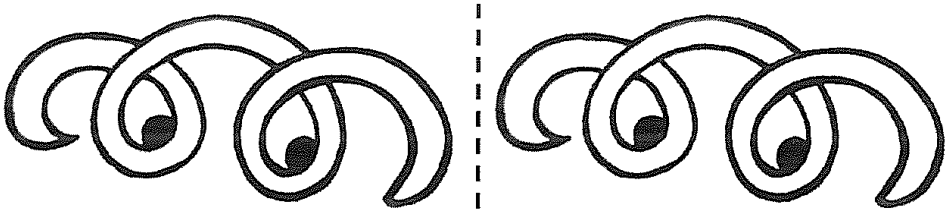

Spirilla Bacteria

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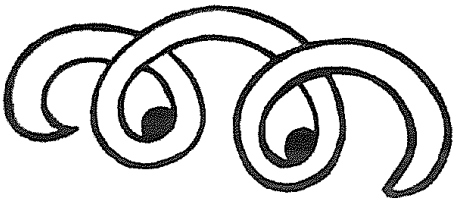

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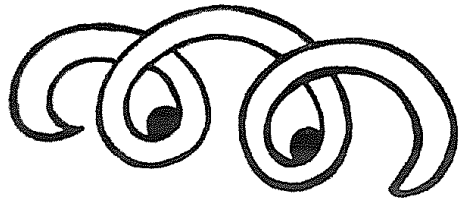

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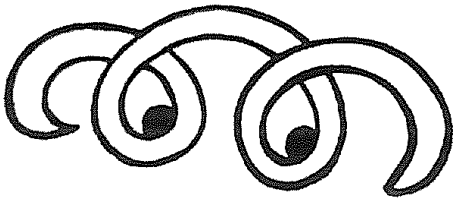
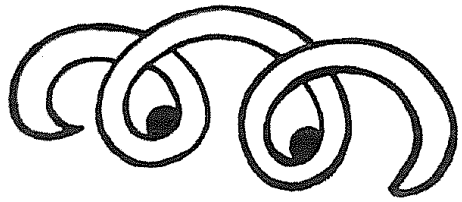
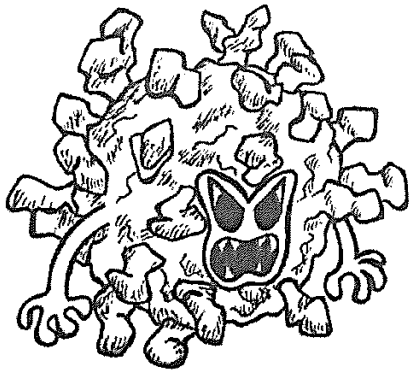


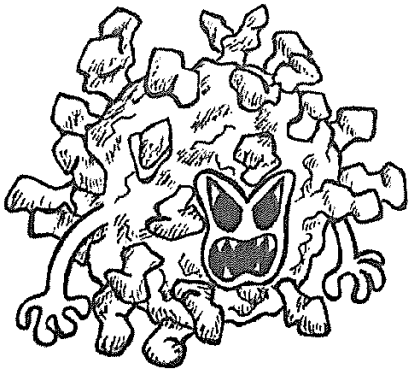
Spirilla Bacteria



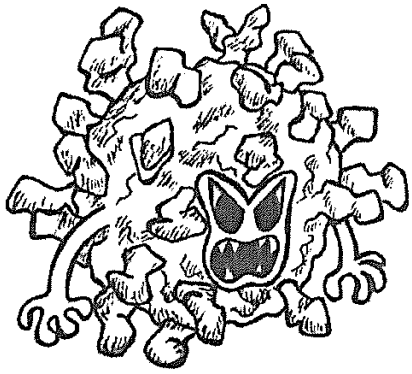
Spirilla Bacteria



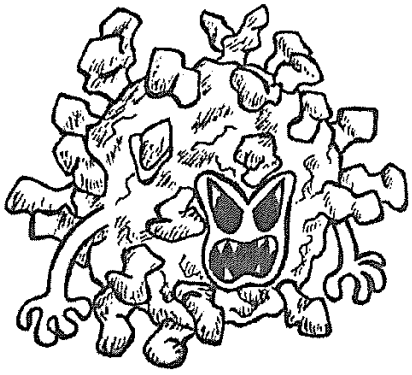
Common Cold Virus



Common Cold Virus



Common Cold Virus



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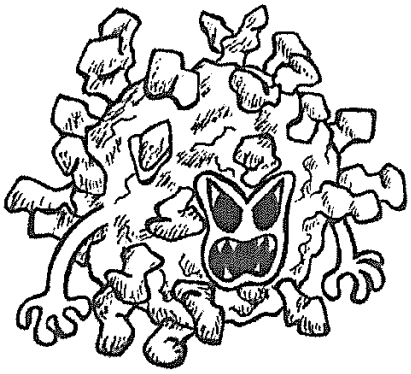
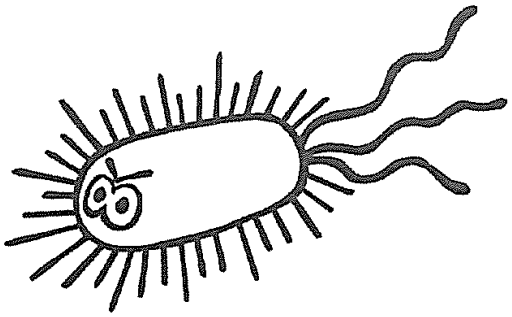
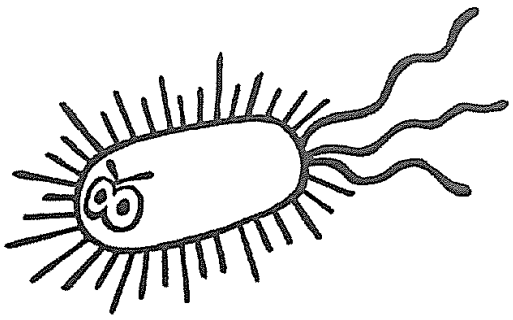


Common Cold Virus

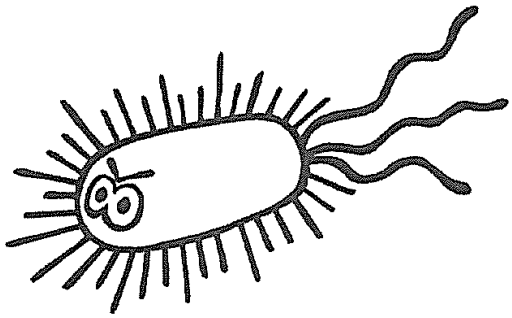
Common Cold Virus



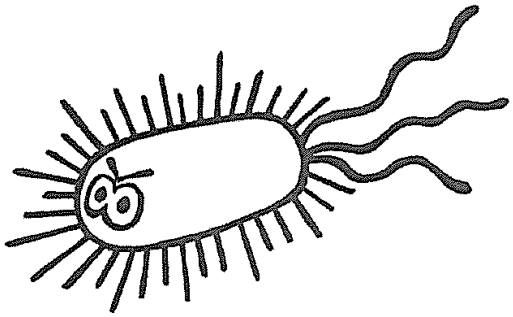
Food Poisoning Bacteria



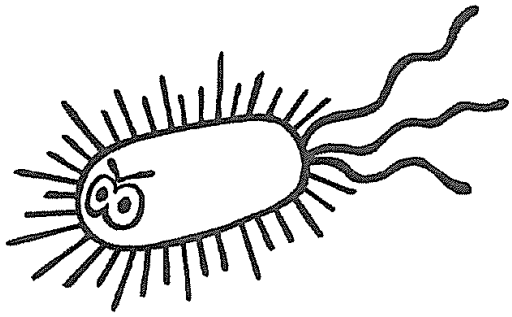
Food Poisoning Bacteria



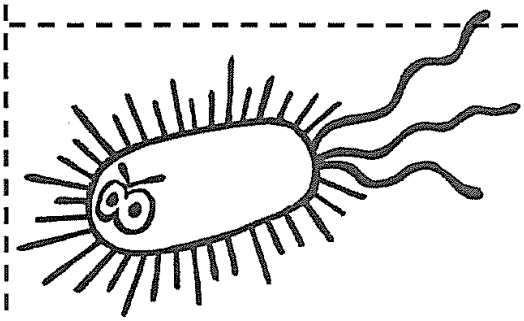
Food Poisoning Bacteria



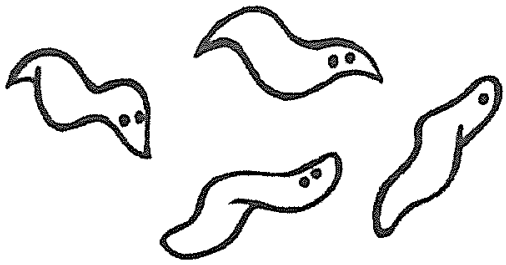
Food Poisoning Bacteria



Food Poisoning Bacteria



Food Poisoning Bacteria



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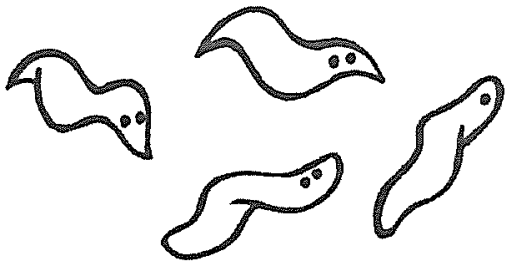
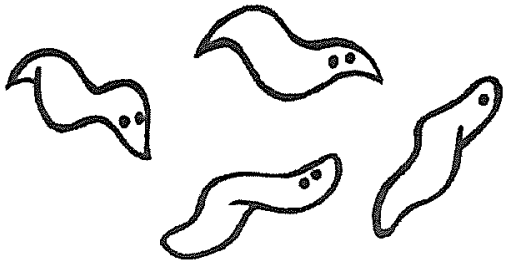
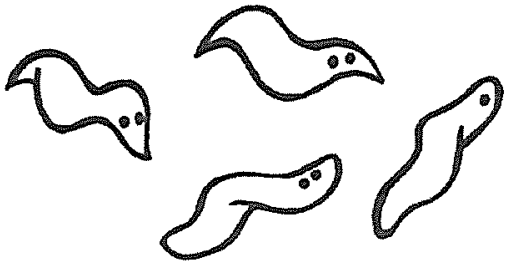


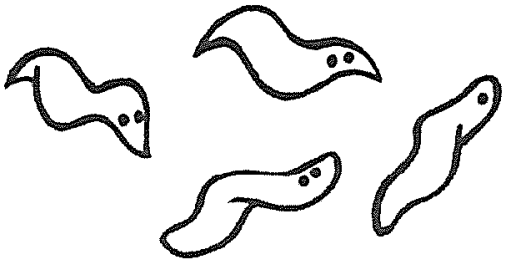
Food Poisoning Bacteria



Food Poisoning Bacteria



Food Poisoning Bacteria



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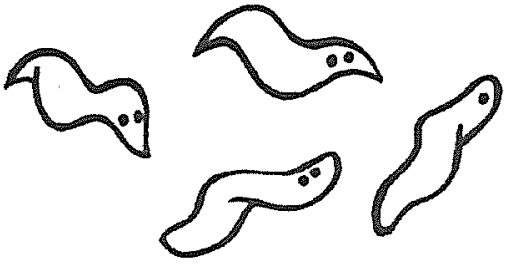

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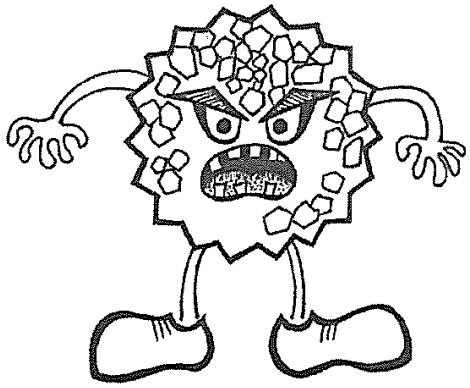
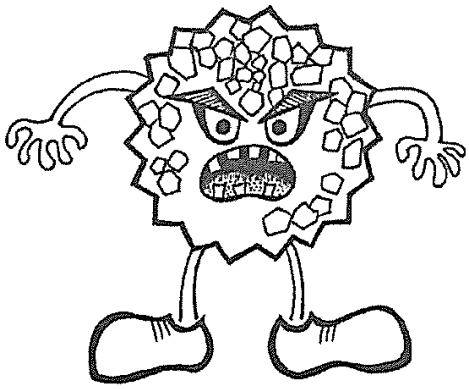
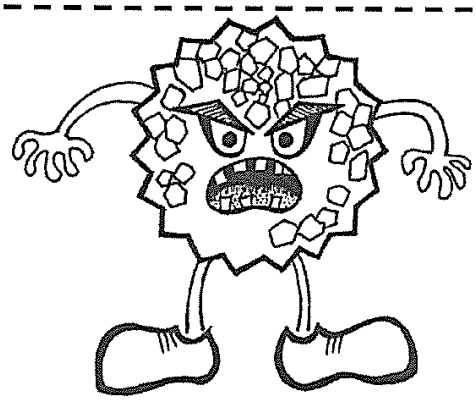


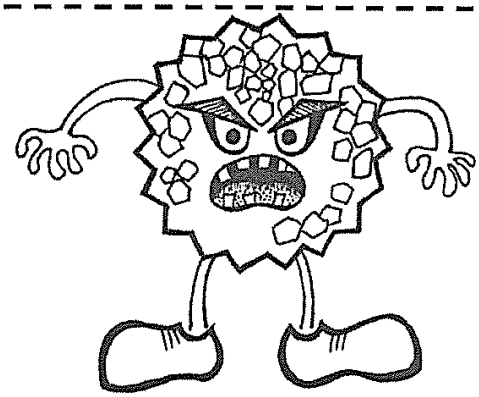
Diarrhea Virus



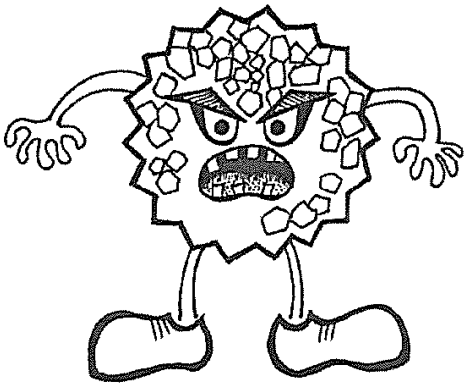
Diarrhea Virus



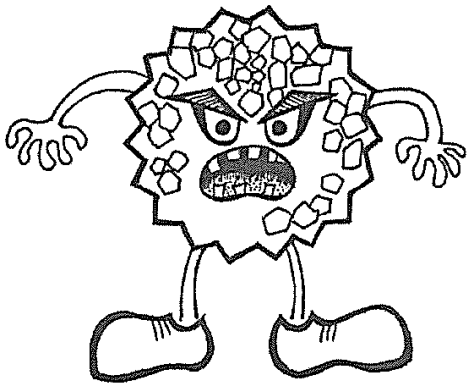
Diarrhea Virus



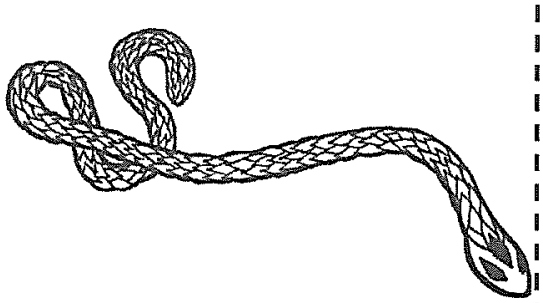
Diarrhea Virus



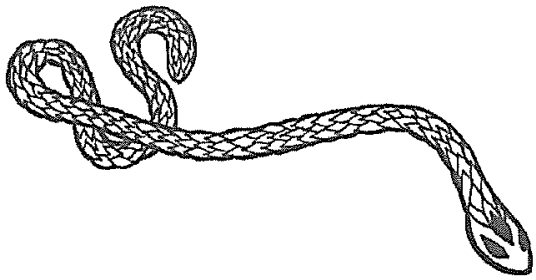
Diarrhea Virus



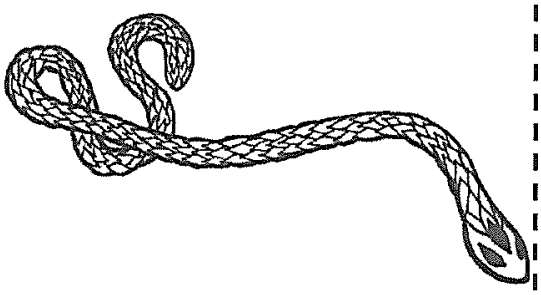
Diarrhea Virus



Ebola Virus



Ebola Virus



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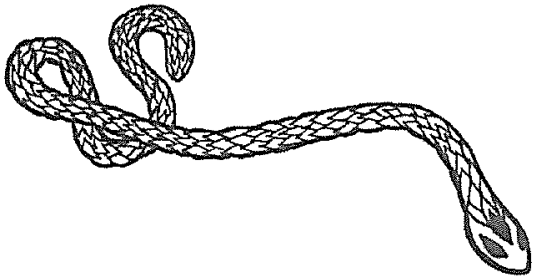
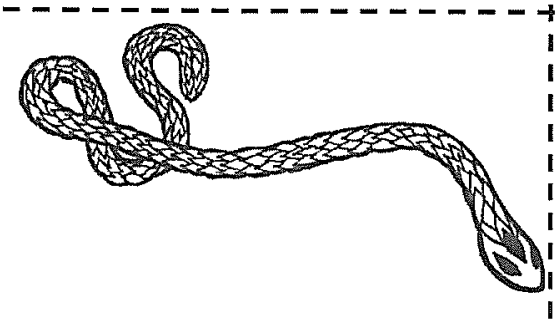


Ebola Virus



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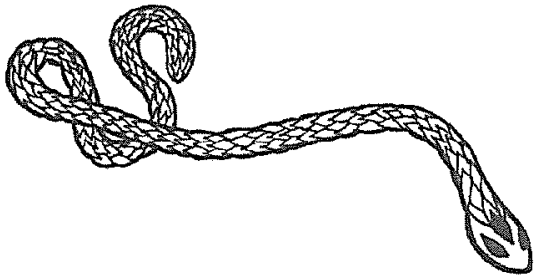

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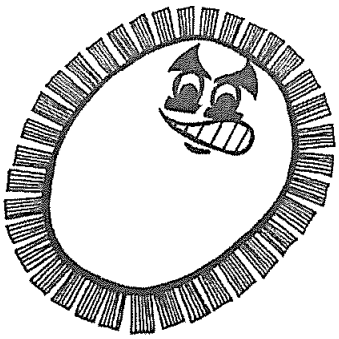
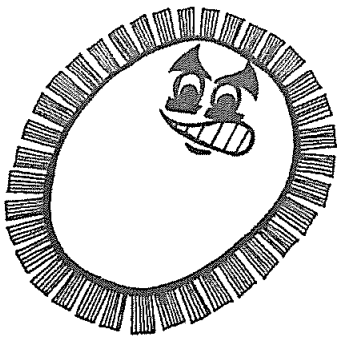
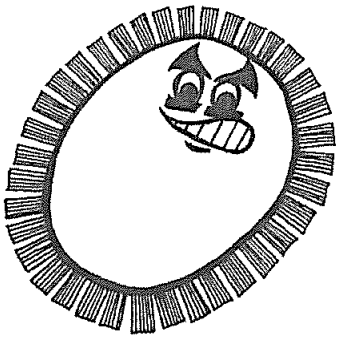


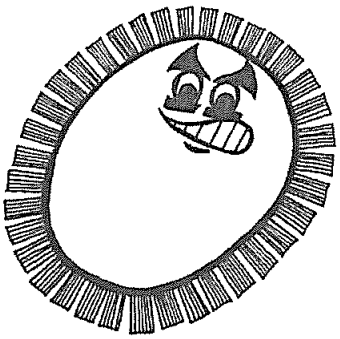
Flu Virus



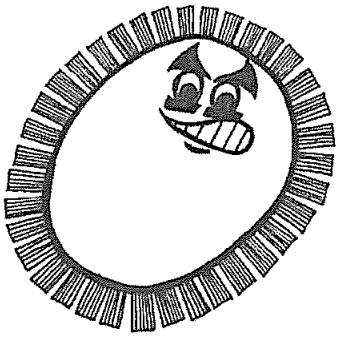
Flu Virus



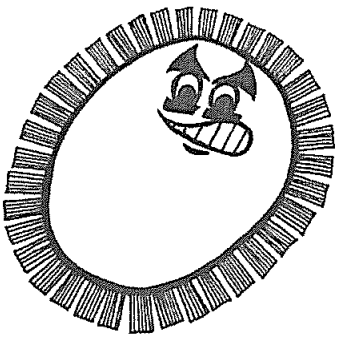
Flu Virus



Flu Virus



Flu Virus



Flu Virus

ACTIVITY #4: COUGHING AND SNEEZING IN YOUR SLEEVE

Description

Millions of disease-causing germs are released into the air every time we cough or sneeze. Children have learned that coughing and sneezing into a tissue can help keep germs from getting on hands and prevents the spread of germs. In reality, coughing and sneezing into a tissue may contaminate the hands. If this occurs, it is strongly recommended that the hands be washed immediately to prevent the spread of germs.

There's another technique in town! Did you know that the best place to sneeze and cough is into fabric, such as one's sleeve, where the germs get trapped, dry out and die? This takes practice, so practice, practice, practice!

Materials

On-Line Video: "Why Don't We Cough In Our Sleeve?"
http://www.coughsafe.com/media.html

Method

1. Explain to the class that they will be demonstrating the proper technique for coughing and sneezing into their sleeve (short or long)

2. Explain to the class how this technique prevents the spread of germs

3. Demonstrate the proper technique for coughing and sneezing into fabric (sleeve or shoulder)

4. Ask 4-6 students to individually demonstrate the technique of coughing into fabric, to the rest of the class then

5. Ask the class to rate the students from 1 (poor) to 3 (successful) on technique each student demonstrated

Resources Available from Algoma Public Health

Resource	Target grade
Glo-germ lotion and UV light	All grades

BOOKS

Buddy Bear's Handwashing Troubles Marjori Cooke	K-2
Germs Are Not for Sharing Elizabeth Verdick	K-2
Germs! Germs! Germs! Bobbi Katz	K-2
Germbusters Handwashing Activity book Marjorie Cooke	K-2
Those mean nasty dirty downright disgusting but invisible germs Judith Anne Rice	K-3
Wash Your Hands! Tony Ross	K-4
Germs on Their Fingers Wendy Wakefield Ferrin	Grades 3-4
The Germ Gang Activity Book Marjorie Cooke	Grades 4-6
Germs Make Me Sick Melvin Berger	Grades 4-6
Germs Ross Collins	Grades 4-6

On-Line Video

Why Don't We Cough In our Sleeve?: 5 minutes	K-Adult

VIDEOS

Just Wash-Em: 7 minutes	K-2
Hands Down on Germs: 8 minutes	Grades 2-4
All Hands on Deck: 10 minutes	Grades 2-4
The War on Germs: 10 minutes	Grades 4-8

Resources are available for a two-week loan period. To book your resource(s), contact Algoma Public Health at 759-5418

Websites for Teachers

1. www.algomapublichealth.com
2. www.itsasnap.org
3. http://www.cdc.gov/germstopper
4. www.glogerm.com
5. www.washup.org
6. www.henrythehand.com
7. www.scrubclub.org

REFERENCES

Cooke, Marjorie T. (1986), Germbusters, Utah: Brevis Corporation.

FDA/CFSAN Food Safety A to Z Reference Guide, September 2001: Handwashing

Handwashing Awareness Week Classroom Kit (1995), The Canadian Paediatric Society in association with Lever 2000.

Handwashing Lesson Plans (2000), Utah Hygiene Education Coalition

The Kindergarten Curriculum (1998), Toronto: Ontario Ministry of Education and Training.

The Ontario Curriculum Grades 1-8: Science and Technology (1998), Toronto: Ontario Ministry of Education and Training.

The Ontario Curriculum Grades 1-8: Health and Physical Science (1998). Toronto: Ontario Ministry of Education and Training.

The Lung Association, the CHN Respiratory Diseases.(2006). The Importance of Handwashing for your Health.

www.microbe.org/washup/Wash_Up.asp (1999), American Society of Microbiology.

The Ministry of Health and Long-Term Care. Handwashing: http://www.health.gov.on.ca/english/public/program/pubhealth/handwashing/handwashing_mn.html

Minnesota Department of Health. (2005) Handwashing: Prevent Disease & Outbreak Intervention.

Safe or Sorry – Food Safety Program of the Minnesota Department of Health, Environmental Health Division, April 2001, Revised 2003.