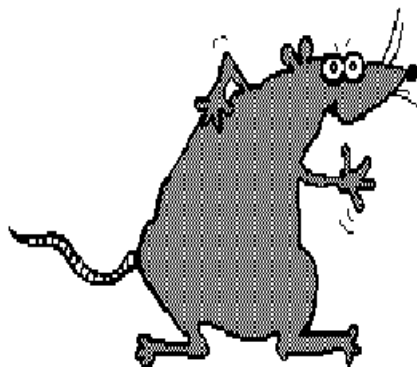


Animal Care Manual



- Rats and Mice -

Revised - Summer 2002

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Introduction

The National Institute of Health's Guide for the Care and Use of Laboratory Animals (hereafter referred to as the NIH Guide) states: "The scientific community has long recognized both a scientific and an ethical responsibility for the humane care of animals". Here, at Macalester, student animal care workers and researchers carry an important part of this responsibility. All animals in the facility deserve our respect, and depend on animal care workers and researchers for diligent, compassionate care. This care includes general cleaning, careful observation of the animals, housing new animals, maintaining proper food and water schedules, correct storage of supplies, and effectively dealing with emergencies. It is crucial that we always keep this in mind when working in the animal facility.

This manual will serve as a guide to working in the animal facility. Animal care workers should also keep in touch with investigators, because often an investigator, professor or student, will have special instructions concerning how he/she wants his/her animals kept, in addition to the guidelines in this manual.

To aid in providing animal care, these things should be in every animal room:

- animal care daily log - off white
- census log – light yellow
- monthly / bi-weekly checklist – light green
- names and phone numbers of people to contact in case of an emergency (for specific studies)

With careful consideration of the animals, being an animal care worker can be a very rewarding experience!

Standard Animal Facility Conditions

Lighting

- animal room lights are on from 8 AM – 8 PM, or 7 AM – 7 PM (dependent on daylight savings)
- lights can be changed from 1 bulb to 3 bulbs if needed
- the red light outside indicates that the room lights are on

NIH Regulations

Recommended Relative Humidity and Dry-Bulb Temperature for Laboratory Animals

Animal	Relative Humidity	Temperature
Mouse or Rat	40-70 %	18-26 °C / 64-79 °F

General Animal Facility Responsibilities

Daily

- check facility notebook (in 165A - the locker room) for special instructions or messages
- fill food and water (see page 7)
- check condition of animals (see Helpful Hints below)
- record census - separated by INVESTIGATOR NAME
- wash caging (see page 8)
- wipe tables down and whatever else is necessary to make the whole animal facility look tidy
- sweep and mop all floor space (this includes all hall space)
- Helpful Hints
 - At least once a day, every cage needs to be checked in case a water bottle has leaked. If one has, the cage should be changed immediately.
 - Water bottles should always be at least 1/2 full. This assures us that an animal will not run out in the middle of the night. Also, if the water appears cloudy or has stuff (i.e. shavings, feces) in it, the water must be changed. If water levels are not dropping in the bottle, please check the stopper to be sure it is working properly. Washing the bottles every week helps to keep the stoppers clean and working properly.
 - Some health problems to look for include tumors, eye problems, bloody urine or stools, lacerations, and limb weakness, as well as a general change in physical condition (i.e. sudden weight loss or gain).
 - It is perfectly normal for mice, especially males, to occasionally fight. However, if one mouse seems to be particularly aggressive, or if a mouse has been injured in a fight, that mouse should be moved to a cage of its own (be sure to label the new cage). If a mouse has been seriously injured, the investigator should be notified immediately. If the investigator is not available, treat this situation as an emergency (see page 13 for phone numbers).
 - If an animal is found dead, notify the investigator as soon as possible. This should be common sense, but make sure a supposedly dead animal is truly in the great beyond before disposing of it. A good rule, if the animal is not stiff, is to watch and feel the animal for a full minute to check for breathing and/or a heart beat. Note the animal's departure on the cage card and the census, which is on the clipboard in each animal room. Place the dead animal in a plastic bag (in storeroom) and label it with the investigator's name, date of death, and cage number (if available). Place the bag on the right side of the freezer (the non-Raptor Center side) unless otherwise instructed.

Staff from The Raptor Center will periodically come and retrieve animals from the freezer. (The Raptor Center is an agency who heals sick and injured birds of prey. Rodents from here and other animal facilities are used to feed these birds. It's a kind of recycling, using the same rodents as many times as possible). Only rodents which have not been injected or implanted may be "donated" to the Raptor Center. We do not want to further injure the raptors by giving them bad food.



Weekly

- change multiply housed rats twice a week(i.e. on Mon. and Thurs.)
- change singly housed clear rat boxes once a week (Mon.)
- change mice twice a week (Tues. and Fri.)
- wash all water bottles
- clean plastic cages (see page 8)
- wipe all horizontal surfaces with a damp sponge



Twice a Month

- spray down all animal racks
- change and clean cage covers
- clean associated animal rooms (i. e. storage, cage washer room, etc.)



Monthly

- Clean empty animal rooms
- Wipe walls, doors, door jambs, and all vents of the animal rooms using sponge and/or mop. Do not forget to clean the ceiling and record vent indicator level.



Cage Card Notes

Occasionally a researcher will need an animal euthanized or donated to the Raptor Center. Researchers are instructed to write either EUTH. or RAPTOR on the cage card with a colored pen or marker. Please note these departures on the census sheet. Only people authorized to sacrifice animals should do so.

Rat Handling

Everyone needs to (is allowed to) handle for 2 - 3 hours each week. Although these schedules are very flexible, it would be a bit crowded if three of you were to handle rats at the same time, or while the cages are being changed.

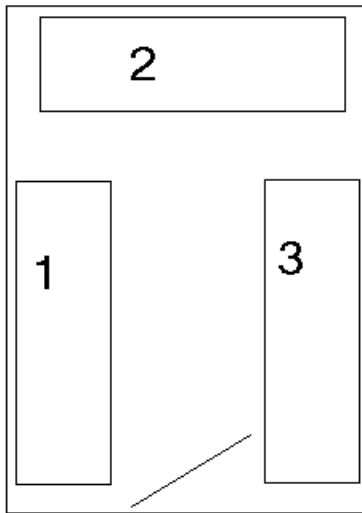
Please try to make sure each rat is handled once a week. Priority is always given to surgical rats, and should be handled EACH week. Try to spend 3 - 5 minutes handling each one. Get them used to being picked up and handled. Feel free to wear a lab coat, and grab a chair (if you are comfortable they may also be!). Many like to have their ears scratched and enjoy being petted. Be sure to record on the Handling Log which animals you handled. Feel free to write notes about their disposition, etc.

Rooms are set up as follows:

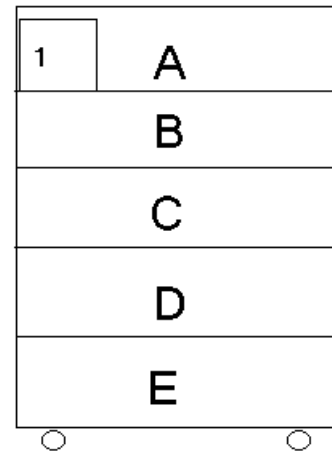
First rack on left is #1, then #2, etc.

Top row on rack is A, then B, etc.

First cage on left is 1, then 2, 3, 4, and finally 5.



Rack Numbers



Row and Cage Numbers/Letters

Occasionally, you will have a “gap” between cages. This may be to separate rats from different experimental groups or different investigators. Please try to leave them in the same location so that people may find their animals.

Housing of New Animals

Please remember that incoming animals have had a long trip; we want them to be in their cages and comfortable as soon as possible! :-)

Before New Animals Arrive

Animal care workers are usually given advance warning of new shipments. This gives us time to prepare for the animals' arrival. These things should be ready for them: cages with bedding, lids, cage cards, and water bottles.

- Helpful Hints
- Bedding should be about 3/4 in. deep and should cover the entire bottom of the cage (but no more than 1.0 inch deep - this is unnecessary and only wastes bedding). For small cages this is about half a scoop, and for large cages, about 1 scoop.

When New Animals Arrive

When everything is prepared well, housing the new animals will go smoothly. Animal care workers need to do these things:

- place proper number of animals in each cage (see page 8)
- give each cage a water bottle and food
- label each cage (see Helpful Hints below)
- note how many arrive (under the proper investigators' name) on the census log
- write the date of birth (DOB) on the packing slip and give both copies to the A. F. supervisor
- Helpful Hints
- Remember that most new animals aren't used to being handled. It is often easiest to pick them up by the base of the tail; however, if holding them for extended periods of time or if the animal is large, pick the animal up by the scruff of its neck (mice) or by grabbing it around its shoulders (rats).
- Be sure the animal room door is closed when putting animals into their cages and when changing their cages. Accidents sometimes happen, and we don't want any escapees.
- Make sure the tip of the water bottle is not touching the bedding or the bedding will get soaked.
- It's easier to count mice while putting them into the cages, rather than counting them after they are all in the cage.

There should be labels for every cage in all the rooms. (These are typically prepared in advance for you.) Labels include: investigator, accurate strain name (some differ by only a few letters), sex, date of birth (DOB), date of arrival (DOA), arrival weight, protocol number and the number of animals in each cage.

NIH's Minimum Space Recommendations for Laboratory Animals:

<u>Mice</u>	Weight (g)	Floor Area/ Animal (in²)	Animals/ Lg. Cage	Animals/ Sm. Cage
	<10	6.0	33	13
	10-15	8.0	24	10
	15-25	12.0	16	6
	>25	15.0	13	5

At Macalester, we usually put no more than 10 mice per large cage and 5 per small.

Cage Specifications:

Large: 19"x 10.5"x 6"

Small: 11.5"x 7"x 5"

<u>Rats</u>	Weight (g)	Floor Area/ Animal (in²)	Animals/ Plastic Cage	Animals/ Wire Cage
	<100	17.0	7	4
	100-200	23.0	5	2
	200-300	29.0	4	2
	300-400	40.0	3	1
	400-500	60.0	2	1
	>500	70.0	1	0

Cage Specifications:

Clear plastic rat cages: 19" x 10.5" x 8"

Cage specifications and animals/cage: NIH Guide 1996

Cage Cleaning

Cage cleaning and changing is completed through these steps:

- Prepare new cages for the animals (see page 7).
- Transfer animals to their new cages by gently picking them up by the base of their tail or shoulders. *This is a good time to check on the general health of the animal.*
- Dispose of dirty bedding and scrape the cages out in the hood area of cage washing room.
- Put the dirty cages into the cage washing machine. Instructions should be posted on the machine (also see Helpful Hints).
- Helpful Hints
- Be sure to transfer the cage labels to the correct cages! Be careful not to mix animals up between cages.
- Water bottles should be washed by placing the bottle racks upside-down in the cage washer. Rubber stoppers for the bottles and food hopper for the wire bottom rat cages can be cleaned in the accessory basket.
- Lids for the plastic cages need to be cleaned every other week and can be cleaned by placing a small pile (4 - 6) of them in the same manner as the cages.
- If the cage washer breaks down, the Physical Plant should be notified immediately (x6278). If the pump is running dry, turn the machine OFF. This counts as an emergency, so a work order request does not need to be filled out.
- Do not fill the garbage cans more than half full. The custodians will take them, but only if we do not over fill the garbage cans. This can mean that on changing day we could have 8 filled cans.

CAGE WASHER INSTRUCTIONS:

1. Empty the screens of shavings and fur into garbage or sink. Put them back in properly!
2. Read over the WEEKLY and DAILY “checklists” for the cage washer maintenance and complete any necessary checks. Contact Physical Plant (x6278), ACS Supervisor and/or Ken Moffett (x6383) if something seems wrong or the machine is operating improperly.
3. Load cage washer. Be sure caging, etc. is in an optimum position for cleaning and strapped in if necessary. Typically you can have 16 clear rat boxes and 12 small mouse cages in a load.
4. Pour detergent into the machine.
5. Shut doors of the machine and be sure both handles are secure.
6. Check all machine settings and push the START button.

standard settings:

FINAL DRAIN off until last load, or press the DRAIN button at end of the day.

PRE-WASH off

HOLD off

WASH set at 7 minutes

1ST RINSE set at 2 minutes

2ND RINSE set at 2 minutes

Come back in 20 - 30 minutes and reload!

7. Before unloading the machine, please shut the door to the hallway. We have set the fire alarms off several times because the steam from the washer hits the sensor! The alarms are LOUD!

These are the NIH requirements:

The temperature of the cage washing machine *rinse cycle* should be at least 180 °F. The wash cycle temperature is less important (but the machine will not “run” if the wash temperature is below 135 °F) because detergent is being used. Deodorizers should not be a requirement in the animal facility. There is no substitute for a good cleaning!

Breeding

Setting up a breeding cage

Put one male and one or two females in a cage. To keep the breeders separate, write 'Breeding Cage' on the cage card.

After about two weeks...

Since a mouse and rats gestation period is about 21 – 24 days, by now at least one of the females in the breeding cage should show some signs of being pregnant. These signs include swelling or bulges in the abdomen, and a noticeable 'waddle' in their walk. One or more of the following needs to be done:

- If no female in the breeding cage shows signs of being pregnant, the male should be replaced, and he should be given a cage of his own. Mark the label on his cage "Non-Productive Male", so that he will not be put into another breeding cage.
- Try to make sure that a pregnant animal's cage is cleaned shortly before the litter is born. After a litter is born, the cage shouldn't be cleaned until after the pups are a week old if it can be avoided. When you change the cage, check to be sure you have not missed any pups!
- When a litter is born, count the pups (without disturbing the happy family too much), and note the number of pups and the date of birth on the breeding cage labels.
- After the litter is born, you should check to be sure the mother is feeding her pups. You should be able to see a white "spot" in the tummy of the pups. If you cannot see this it is possible we will need to give the pups to a "surrogate" mother.
- It is common for a mother, especially a first-time mother, to eat some or all of her babies. If she does this, please notify the supervisor, and leave a message in the notebook.

Three weeks after birth

When the pups are 21 days or a little older, they are ready to be weaned, or taken from their mother. Female weanlings should be given one cage and males (see space requirements on page 8). Be sure to keep an especially careful eye on younger mice when opening their cages. Their nickname of 'popcorn' is well-earned! Remember to note the additions on the census sheet.

Feeding and Watering of Animals

Food hoppers and water bottles must be checked daily and kept full unless the animals are on a deprivation schedule (see below for instructions).

- one bottle only per cage (NIH Guide)
- water bottles need to be cleaned in the cage washing machine weekly (see page 9)
- check for and toss moldy food

Food and Water Deprivation

If an animal is to be **food-deprived**, its cage card needs to be marked with a **RED dot**.

If an animal is to be **water-deprived**, its cage card needs to be marked with a **YELLOW dot**.

A note alerting Animal Care Staff that standard food or water conditions will be altered **MUST** be left in the facility notebook (located in 165A - the locker room) as well as on the door and/or in the room. All notes must be kept up to date to avoid mistakes from being made during routine cleaning of cages and water bottles.

IN GENERAL:

Animals without colored dots will be maintained on free food and water.

- DEPRIVED ANIMALS -

- * If a cage with a red dot is found with food, An. Care Staff are to leave the food with the animal unless a note instructs otherwise.
- * If a cage with a yellow dot is found with water, An. Care Staff are to leave the water with the animal unless a note instructs otherwise.
- * It should **NOT** be assumed that special feeding or watering instructions (specific feeding or watering times) can be followed by the An. Care Staff.

- SPECIAL FOOD OR WATER -

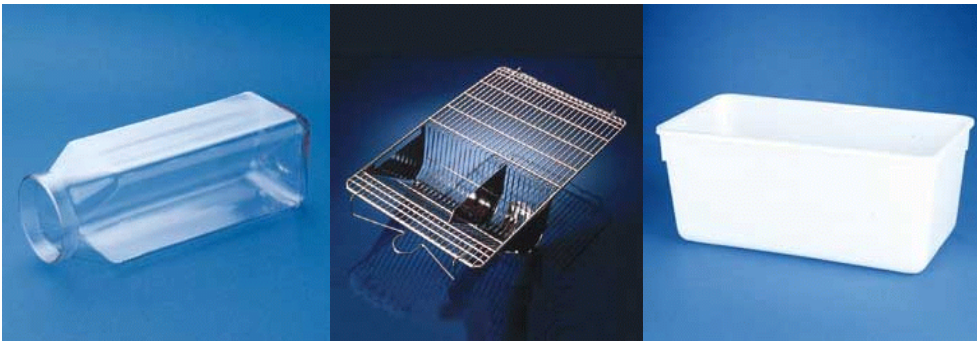
- * When special feed or water are used, the Investigator needs to be sure the animals are taken care of within the guidelines of The Guide. This means **EVERY** day. When altering food or water, leave a note pertaining to this in the notebook as well as attached to the cages (i.e. use a different cage card and not a post-it note - they fall off). When altering water **DO NOT** write **ON** the bottle. Label the bottle with colored tape instead.
- * If it appears that an animal is **NOT** being cared for appropriately, An. Care Staff will be instructed to notify the A. F. Supervisor. If the animal has run out of food or water, they will be instructed to feed or water. Having an animal die because of poor care on the part of the investigator **IS NOT** an option.

Supplies

In order to keep the animal facility running efficiently, there should always be an adequate supply of food, bedding, rat tray liners, and detergent. Animal care workers need to make sure that these supplies are ordered well ahead of time and properly stored. Always give any papers (especially invoices) that come with the orders to the A. F. Supervisor. Let the supervisor know when we need supplies (leave a note in the notebook). We should NEVER run out of any of these.

Clean Cages, Trays, and Water Bottles

Clean cages, covers, and water bottles are stored in the storage room on the shelving. Use the correct cover and cage for each species. We have a few different covers and using them on the wrong species leads to escapes!



500 ml water bottle

Large cage mouse cover

Rat size cage

NIH requirements:

All animal supplies must be stored off the floor and 6 inches from the wall, in barrels in the animal rooms, or on shelves and pallets.

Food bags should be 'dated', and the feed barrel should be labeled with the feed milling date (usually printed on the bottom of the bag). When filling the barrel the older food needs to be used first (feed "expires" 6 months after the milling date) and the "liners" (garbage bags) need to be changed.

Food

Food bags are stored on a pallet in the storage room. Oldest dated food must be used first. When there are three or four bags of food left it is time to reorder. Usually 10 bags are ordered at a time, and they are delivered in 1-7 days, depending on which day the order went in. We are currently using Rodent Diet #8604 from Harlan Teklad, Madison, WI.

Bedding and Rat Tray Liners

Bedding (Sani-Chips) need to be reordered when we are down to 4 bags. However, if the supplies seem to be running low, talk to the ACS Supervisor. Both must be kept off the floor.

Detergent

These are ordered through the Chemical Stockroom, therefore we need to triple rinse and return the empty bottles. Detergents used can vary, so check the MSDS sheets if you have any questions.

Detergent Use

Use of detergents requires gloves and safety goggles. Both can be found in the Cage Washer Room.

Quinticare:

- “Applications include: exam/surgery tables, walls, floors, sinks, and counter tops. Use cloth, mop, or mechanical spray device so as to thoroughly wet surface. For heavily soiled areas, a preliminary cleaning is required. Prepare a fresh solution daily or when solution becomes visibly dirty.
- Routine Disinfecting - add 1 oz. per gallon of water. Treated surfaces should remain wet for 10 min.
- Problem Areas - use 2 - 4 oz. per gallon of water
- Disinfecting of Food Utensils for animals - Scrape and pre-wash with warm water, soak in 1 oz. per gallon Quinticare for at least 10 min. and rinse with potable water.”
- For mopping daily use one pump full per bucket. Rinse and refill the mop bucket daily.
- Wall and room cleaning. Use a 2 - 3 oz. per gallon solution. Refill when solution becomes dirty.
- If the solution you are using is dark blue then you are using too much. The pump has measurements on it for you to use - so please do.

Acidulate 28:

- Pink cage washer detergent. Corrosive!
- Use ~100 ml per washer load.

Important Animal Facility Phone Numbers

If an animal appears slightly ill, but does not seem to be in any pain, the investigator should be notified. If the animal appears to be suffering, whether from an injury, surgery, or anything else, this is an emergency, and the investigator should be notified immediately. If the investigator is not available, call Sarah Sjogren Miller, Lin Aanonsen, or Jan Serie. Their phone numbers are posted on several doors in the animal facility, as well as below.

Sarah Sjogren Miller	Animal Facility Supervisor
Office:	x6178

Jan Serie	IACUC Chair
Office:	x6372

Lin Aanonsen	Animal Facility Manager
Office:	x6470

Hall phone: Please limit personal use!	x 6228
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Winton Health Services:	x 6275
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Physical Plant:	x 6278
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Security Office: - <i>emergency only</i>	x 6555
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- non-emergency	x 6450
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Police, Fire, Ambulance:	911
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If you call outside emergency services to campus, please also call x6555 to notify the Security Office of the emergency's location and the service you called.

Biology Dept. office:

Patty Pfalz	x 6442
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Psychology Dept. office:

Mary Claire Schultz	x 6223
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Animal Bites & Scratches

In general, most of the animal strains we have at Macalester are very easy to handle and rarely bite. Most bites are received when the animal is agitated, in pain, protecting young, or mistakes your finger for food (sticking a finger through the cage cover will often initiate a bite from a rat). Mice tend to be more prone to biting and rats like to “taste” your fingers on occasion. The most common injury is probably scratches on your hands and arms from toenails. Handling the animals frequently will often prevent this, because if they are comfortable, then they do not tend to struggle as much. The ACS Supervisor should be notified of any wound or aggressively behaving animal.

**None of this advice is a replacement for getting medical attention!
Please see a doctor if you have an injury or suspect allergies.**

MINOR WOUNDS

Any wound should be immediately cleaned with soap and water, and then treated with Betadine, alcohol, or other topical antibiotic. If the wound breaks the skin you should update your tetanus shot if it is over 5 years old. During the school year please call Winton Health Services to update your shot. During summer contact your insurance provider.

MAJOR WOUNDS

If you have received a major injury from an animal or some equipment, you should call campus security immediately as well as calling your supervisor.

Emergency Procedure

When an alarm is sounded, vacate the building as quickly as possible. The nearest exit doors are located at the stairwell on the North side of the vending area of first floor. Meet everyone in Shaw Field so that we may be sure everyone is accounted for.

There is an red emergency call button located on first floor outside of the cage washer room. This is for use in a medical emergency or mechanical catastrophe (i.e. fire, gas leak, etc.). If you accidentally lean on this alarm, please call campus security immediately to tell them you have accidentally sounded the alarm.

Security Notes

You must not allow anyone into the lab who is not authorized to be there (including friends) - you must obtain permission before you may let a friend “visit”. You are responsible for whomever you let in! You should keep the main doors closed and locked at all times and the animal room doors should be shut whenever you are away for more than a minute. If anyone approaches you with questions about animal welfare, etc. (whether from someone within the department or outside the department), you should direct that person to the IACUC Chair, Jan Serie.

No equipment or supplies should be removed from the lab. If someone asks to borrow something, send that person to the proper faculty or staff member. If you see unfamiliar people in the animal rooms, *don't* be afraid to ask them if they are supposed to be there (**remember that you are responsible for what goes on in the lab any time you are in it!**), and report any suspicious people or events to the A. F. Supervisor. **Lab security is of extreme importance!**

Additional Employee Information

One verbal warning, and/or one written warning will be given before a Student Employee Discipline Report is filed. Depending upon the reason for a report, additional violations will result in termination. Essentially, if you fail to come to work twice you will be fired. This generally means you lose the option of earning your award the *rest of the school year*. Please see the STUDENT EMPLOYMENT HANDBOOK for more information.

Reasons a report may be necessary:

- failing to report to work
- repeatedly failing to notify supervisor of schedule changes
- continually failing to complete job duties satisfactorily
- mishandling or mistreating the animals in the facility
- in addition refer to the STUDENT EMPLOYMENT HANDBOOK

In general, if you are too sick to work you must call by 12:00 and try to find someone to cover for you. If you are going to be late you **must** call no later than 4:00 PM. If you do not it will be assumed that you are failing to report to work. The lives of all the animals in the facility are your responsibility. Your neglect may lead to untimely death, which is not acceptable. Completing your work as assigned assures us that the animals are kept in the best possible conditions. *Their lives are our responsibility and they deserve all the respect we can possibly give them.*