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Facilities for Production and Maintenance of Be^agle Dogs for Life-Span Studies
with Radionuclides*

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Our experimental beagle dog colony at Battelle-Northwest is located at Richland, Washington and has been in operation since 1960. It consists of a closed colony of approximately 600 purebred beagles which are produced and maintained for a study of life-span biological effects with radionuclides.

The quality and quantity of dogs needed in these studies required that we have a record of the complete history of each individual animal. We raised all of the dogs for our long-term chronic effects studies in the facilities that will be discussed this morning. Construction on the facilities was started in 1967 and has had four construction phases.

SLIDE 1: The new Biology Life Sciences Building

1. The dog kennels are located at the top right-hand corner of the picture in two wings off of the support facilities which are located in the middle.

SLIDE 2: A closer view of the kennel buildings.

1. We can see part of the six-foot chain link fence, with a solid metal panel four feet high at the bottom, around the dog kennels. The fence prohibits stray dogs and wild animals from getting into the kennels.

2. The runs are facing the east and west so all dogs are exposed to sunlight at least part of the day.

3. Outside runs can be illuminated at night for observation of the dogs or night cleaning.

SLIDE 3: Line drawing of the dog kennels and support facilities.

1. You will note that there were four phases of construction, one in 1967, 1970, 1971 and one now under construction.

2. When finished this facility will have 250 inside-outside runs, housing 500 beagle dogs.

3. The support facility includes a change room, metabolism rooms, shared surgery suite, X-ray and darkroom, necropsy, support labs, food preparation, dog clinic and surgery, and dog hospital.

SLIDE 4: Change room.

1. All personnel working in the dog kennel area must put on safety boots provided and orange coveralls and shoe-covers. We can determine whether the individual has gone through the proper clothing changes by the special colors worn in each animal facility and other work areas of the laboratory.

SLIDE 5: Support corridor leading to dog kennels.

1. You step out of the change room door and look down the corridor; the first door on your left is the dog surgery and the clinic area. On the right is our food preparation and hospital area.

2. At the end of the corridor is the entry to the dog kennels.

SLIDE 6: Dog kennels inside (west wing)

1. The dog facilities are divided with double doors into kennels with 20 to 40 inside stalls that connect to outside runs in each kennel. These separate kennels are all alike except that the breeding kennel has some added features. The facility was divided to reduce noise levels and control air balance.

2. Waterproof lights controlled by timers illuminate the inside stalls to 100 foot-candles of light at one foot off the floor. Emergency lights are provided.

3. Music and a public address system are provided in the kennels, hospital support laboratories, corridors, and dog cage rooms.

4. Telephones are located in strategic places.

5. Concrete floors in the service corridor, inside stalls, outside runs, dividers, curbs, and support facilities are covered with "Dexotex Cheminert" seamless flooring or wall covering.

6. The older stall and run dividers are ceramic glazed block. The ceramic block on the outside run dividers has been replaced with the seamless wall covering because water penetrated the glaze and froze, causing the face to erode.

7. The ceilings are suspended acoustic panels for noise control and access to utilities above the ceilings.

8. Service corridor floors are sloped 3/16" per foot towards the floor trenches.

SLIDE 7: Dog facilities (elevated stalls)

1. Dog stalls are elevated 2 feet above the service corridor to help isolate them from the traffic in the corridor. The added height of the stalls makes handling, observing and feeding of the dogs much easier.

2. Heating and cooling of the dog kennels is supplied through ducts in the service corridor and exhaust through the ceiling. 100% outside, make-up air is used, supplied at the rate of 30 cfm per dog.

3. Dog stalls and outside runs have electric heat in the concrete floors.

SLIDE 8: Inside gates.

1. Gates are made of 9-gauge expanded metal. Note the diamond slots must be horizontal or the dogs will catch their toenails in the fence.

2. Hollister identification markers are used on all of the stall gates to give specific data and instructions for each dog housed in the stall.

SLIDE 9: Inside stalls and outside runs (with Lexan door)

1. Clear "Lexan" guillotine doors 30" high by 24" wide divide the inside stall from the outside runs. These doors have flaps 8" x 10" provided with a solenoid lock enabling dogs in the same run to be isolated from one another if desirable.

2. Each stall is 3 ft deep, 2 ft wide and 4 ft high.

SLIDE 10: Inside stall and outside run (with old-style door)

1. This slide shows the old metal guillotine door.

2. Notice the fecal material scattered up and down the stall floor and outside run.

SLIDE 11: Inside stall and outside run (with new door)

1. This is an inside stall and outside run with the "Lexan" clear guillotine door. Notice the fecal material is down at the far end of the run. This is fairly noticeable in all runs with clear doors.

SLIDE 12: Breeding Performance, 1968-1971

1. 313 puppies were born, with a survival rate of 87%.

SLIDE 13: New whelping facility, finished in 1972

1. One kennel is used to house gestation bitches and puppies until weaning.

2. The inside stalls are the same as all kennels except for the divider between two stalls, which can be lifted up 18" to make more room for the bitch during whelping.

3. A solid panel is installed over one door.

4. A heat lamp can be moved from 3 ft to 6 ft above whelping box.

5. Video television on a track can be used to monitor the mother during whelping from the service corridor and clinic area.

6. Note the special whelping box with a burlap floor.

SLIDE 14: Clinic with video television receiver.

1. Personnel can observe the bitch whelping while they are doing other tasks and help her if she has trouble.

SLIDE 15: Entrance to catwalks.

1. Each dog facility wing has an exit in the middle of the wing to the outside.

2. Stairs are used to get to the catwalks located over the outside runs.

SLIDE 16: Outside runs.

1. Outside runs are 2 ft wide by 14 ft long.
2. All runs are divided by a solid divider every 5th run to cut down the barking and fighting between runs.
3. Fence dividers are constructed of 9-gauge galvanized metal, the same as the inside gates. All metal dividers have a one-foot high solid curb beneath them.
4. The catwalk is used to walk over the runs when washing down.

SLIDE 17: Detergent Washdown System

1. Heat exchanger for the washdown system set at 125°F and with pressure at 95 psi.
2. A detergent injector, which injects MicroQuat detergent into the washdown lines at 200 parts quaternary ammonia per gallon of water.
3. The detergent also has disinfectant and deodorant properties.

SLIDE 18: Washdown (inside stalls)

All stalls, service corridors, dividers and inside walls of the kennels are washed with the hot detergent daily.

SLIDE 19: Washdown (outside runs)

1. All runs also are washed at least once daily; puppy runs are washed twice daily.
2. Floors in the runs and stalls are sloped 1/2" per foot from the inside to the gutter.
3. Gates used on the outside runs for emergency entry into the runs are the same as on the inside stalls.

SLIDE 20: Gutters

1. Gutters with 1/4" slope are located along all outside runs.
2. One-inch flush valves are used to move the fecal material to the drains.

SLIDE 21: Catwalk safety rails

1. The catwalks are extended out over the runs every 5 outside runs so the technicians can wash the gutter and outside gates.

SLIDE 22: Metabolism room

1. These cages were designed by Kirschner Scientific of Seattle for special radioisotope inhalation dog studies.

2. Dogs can be given food and water and the urine and feces removed without opening the cage door.

3. There is 30 cfm of room air entering the door of each cage and being exhausted at the rear floor level.

4. All doors, pans and internal parts of the cages are removed and washed in the cage washer.

5. The rest of the cage is washed in place with hot detergent washdown system.

We still have a few problem areas which we are continually trying to improve. One of these has been in finding a suitable material to be used on doors, walls and dividers. We have also had some trouble with our door-locking devices.

In summary, this facility provides a sanitary and healthy environment for housing long-term experimental beagle dogs. It has been designed to facilitate cleaning, monitoring and ultimate utilization of manpower. We believe we have a very modern and efficient operation.