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LIFE SYSTEMS INC CLEVELAND OH

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MAMMALIAN TOXICOLOGY TESTING: PROBLEM DEFINITION STUDY. EQUIPME--ETC(U)

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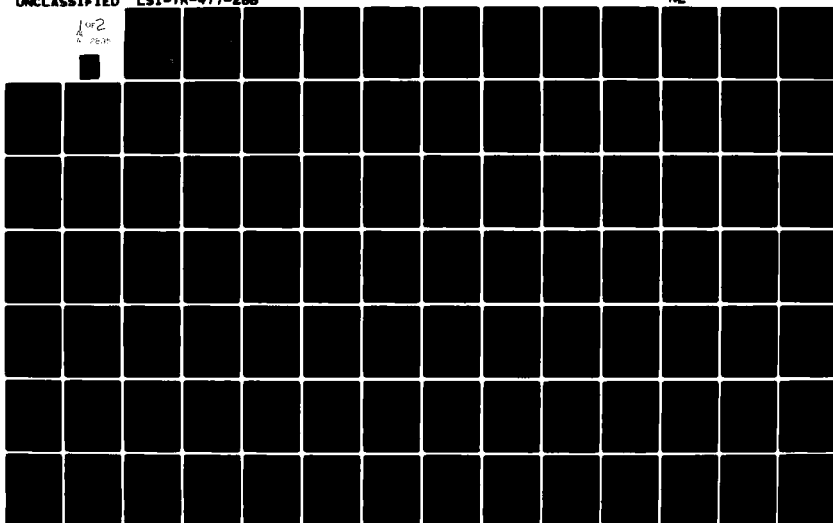
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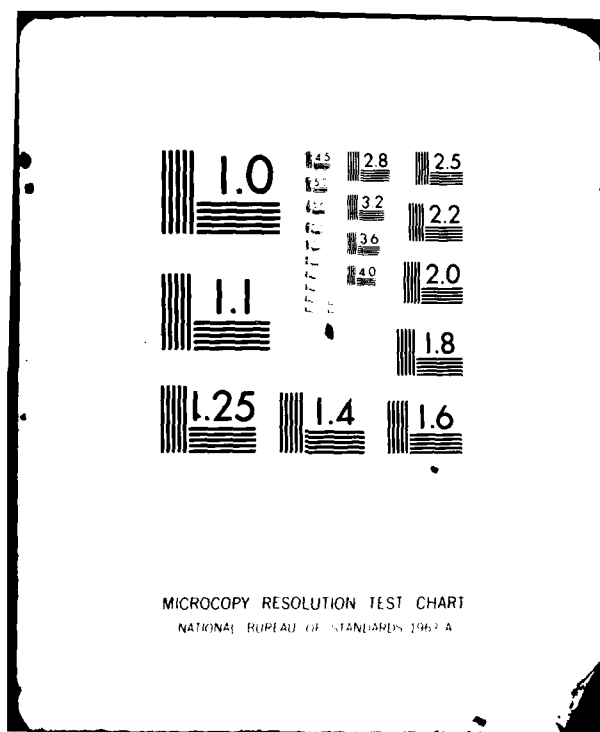
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MAMMALIAN TOXICOLOGY TESTING: PROBLEM DEFINITION STUDY

EQUIPMENT LISTS FOR MODULES (U)

by

G. E. Schiefer, R. V. Alban and R. H. Reuter

April, 1981

Supported by

U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND
Fort Detrick, Frederick, Maryland 21701

Contract DAMD17-81-C-1013

Life Systems, Inc.
Cleveland, OH 44122



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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Information on the equipment required for each of 63 mammalian toxicology areas or laboratories that make up a full service applied research/testing capability are summarized in this report. It represents a data base useful for the selection of a Mammalian Toxicology Facility. Information on the function of each item, its costs, operator title, throughput of the item, the number required in a module, its expected life, size (weight and dimensions), voltage requirements and special requirements are listed.			

18. continued-

Report Subtitle

Life Systems, Inc.
Report Number

Final Reports--

Part 1. Comparative Analysis Report
Part 2. Facility Installation Report
Part 3. Impact of Future Changes Report

LSI-TR-477-2
LSI-TR-477-3
LSI-TR-477-4

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FOREWORD

Reports for this Contract, DAMD17-81-C-1013, consist of three major final reports and twelve supporting documents. The Contract title, MAMMALIAN TOXICOLOGY TESTING: PROBLEM DEFINITION STUDY, is the main title for all the reports. Individual reports are subtitled and referenced with Life Systems, Inc. report numbers as detailed below. Please note that the Life Systems report numbers in test references are shortened. In the Defense Technical Information Center (DTIC) data base the reports are identified by the complete report numbers (i.e., LSI-TR-477-XXX) and complete numbers must be used for retrieval.

<u>Report Subtitle</u>	<u>Life Systems, Inc. Report Number</u>
Final Reports--	
Part 1. Comparative Analysis Report	LSI-TR-477-2
Part 2. Facility Installation Report	LSI-TR-477-3
Part 3. Impact of Future Changes Report	LSI-TR-477-4
Supporting Documents--	
Technology Changes Impact on Testing Requirements	LSI-TR-477-14 -AD-A112 809
Quality Assurance Plan	LSI-TR-477-17A-AD-A112 777
Capability Modules	LSI-TR-477-19B-AD-A112 898
Technical Plan	LSI-TR-477-20A-AD-A112 711
Equipment Plan	LSI-TR-477-21A-AD-A112 897
Personnel Plan	LSI-TR-477-23A-AD-A112 712
Inhalation Chambers and Supporting Equipment Survey	LSI-TR-477-26A-AD-A112 418
Equipment List for Modules	LSI-TR-477-28B-AD-A112 835
AMTR Protocol/Pricing Report	LSI-TR-477-29A-AD-A112 832
Global Army Toxicology Requirements	LSI-TR-477-31A
Comparison Toxicology Test Costs	LSI-TR-477-36A-ADA 112 808
Annual Testing Capacity	LSI-TR-477-38A AD-A-112 896

SUMMARY

A data base was assembled of the equipment needed in an Army Applied Mammalian Toxicology Research/Testing Facility. This data base can be used for the final selection of equipment for a Facility regardless of the types of testing performed or its capacity.

The data base includes information on the function of each equipment item, its cost, operator title, throughput of the item, number required for each module, its expected life, size (weight and dimensions), voltage requirements and any other special requirements.

Equipment lists were provided for the 63 different modules identified for a full-service toxicology research/testing capability.

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INTRODUCTION

A program was undertaken to study and define the Army's requirements for Applied Mammalian Toxicology Research (AMTR) and methods for meeting the requirements. Inherent in the latter is the consideration of the facility, equipment and expendables, personnel, quality assurance and resources needed for the design, construction and operation of such a facility.

Scope of Document

This document was conceived and prepared to accumulate in one spot information on the equipment required for each of the areas/laboratories (modules) that makeup a full service capability facility for AMTR.

Objectives

The objective of this document is to assemble the data base that can be used for the final selection of equipment for an AMTR facility regardless of the types of testing performed or its capacity. The document also provides information on the function of each item, its cost, operator title, throughput of the item, the number required in a module, its expected life, size (weight and dimensions), voltage requirements and special requirements.

EQUIPMENT LISTS

Appendix 1 contains the equipment lists for the 63 modules.

Purpose of Lists

The purpose of each equipment list is to identify the equipment items and pertinent information about each item, as identified by experts familiar with or responsible for operating/managing similar activities. The equipment items are compatible with the module designs prepared in Task 5 and included in TR-477-19B, "Capability Modules." The lists provide flexibility for making equipment selections for a facility by selection of the types of modules desired and the number of each module in the facility. The equipment lists also provide for the selection of equipping modules with only essential items, essential and desirable items or essential, desirable and ideal items.

Information Contained in the Lists

The following information is contained in the lists: the date it was prepared, the name of the individual who completed the list, the area/laboratory (module) number and title, the equipment item name, a determination of whether it is considered essential, desirable or ideal, function, estimated cost (in some cases a cost range is provided), operator title, the capacity of the equipment measured by throughput for a unit of time, the size of the item including weight and dimensions, voltage requirement and special requirements. The lists include all major items, both built-in and movable, that have a cost greater than \$1,000 each or are required in large numbers. A cost estimate for the smaller miscellaneous equipment items and office furniture is included for each module, as applicable.

Procedures Used To Complete Equipment Lists

Experts with firsthand experience in operating and/or managing similar modules prepared the equipment lists. Personnel from Midwest Research Institute, SRI International, Brookhaven National Laboratory, University of California-Davis and LSI participated in completing the lists. Each list was reviewed by an in-house team to ensure that all information was complete, that the data were consistent, that the equipment was compatible with the facility module designs and the built-in equipment designated in the module layout. Identical instructions were provided to each individual completing the equipment lists.

Assumptions

The assumptions made to facilitate completion of the equipment lists are:

1. Toxicology and regulatory changes are not considered in determining the types or number of equipment required for any module.
2. Medium quality equipment is used.
3. Each module is outfitted with all the equipment identified by the preparer of the list who was instructed to equip the module to provide a first-rate testing facility.
4. The equipment list did not take into consideration the presence of any existing equipment.

CONCLUSIONS

The equipment list approach used for modules was formulated to provide a standard approach to identify equipment and to allow equipment items to be added or deleted to each module when final decisions are made. It is also possible to estimate equipment costs and project other requirements utilizing the module concept that are consistent with the facility design. Utilization of the equipment lists will provide the equipment required to carry out the types of AMTR projected for the Army's needs.

APPENDIX 1
EQUIPMENT LISTS

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Equipment List

Date 2/6/81

Complete by Jones, Jorgensen

Area Laboratory No. 1

Title Acute Oral Exposure Area, Rodent

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.			
Cage Rack, 30 rat cages or 60 mouse cages	Hold cages	2.2	Animal Technician	Hold $\leq$ 150 rats or 300 mice	12		X	72x30x72	NA	Automatic watering system
Cage, rat	House rats	0.02	Animal Technician	Hold $\leq$ 5 rats	360	X		22x12.5x8	NA	NA
Cage, mouse	House mice	0.01	Animal Technician	Hold $\leq$ 5 mice	720	X		9.25x12.5x8	NA	NA
Feeder, rat	Hold diet: pellet or meal	0.02	Animal Technician	900 gms	360	X		4x5x5 4x4x7	NA	NA
Feeder, mouse	Hold diet: pellet or meal	0.01	Animal Technician	150 gms	720	X		3x4x4 3x3x6	NA	NA
Balance, 1200 or 4400 gm cap	Weigh rodents, feeders, etc.	0.30	Animal Technician	20 cages (animals & feeder per hour)	1		X	3x14x7	110	NA

(1) Essential

(2) Desirable

(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/6/81
 Complete by Jones, Jorgenson
 Area Laboratory No. 1
 Title Acute Oral Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)	
Table, utility	Hold balance, feeders, etc.	0.30	Animal Technician	NA	1		X	80	60x30x30	NA Casters
Safety Hood System	Personnel protection from toxic chemicals during exposure	7.5	Animal Technician	NA	5		X	800	72x30x108	NA
Worktable w/sink	Work area	3.5	Animal Technician	NA	4		X	500	84x29x37	NA
Balance	Feed weighing	3.7 +0.10	Animal Technician	100 measurements/hour	1		X	10	8x12x4	NA
Additional Equipment	Misc. small items to completely equip area	1.5 +0.5	Staff	NA	Variable			Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/6/81
 Complete by Jones, Jorgensen
 Area Laboratory No. 2
 Title Subchronic Oral Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requir. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Cage Rack, 30 rat cages or 60 mouse cages 1	Hold cages	2.2	Technician	Hold < 150 rats or 300 mice	12		X	400	72x30x72	NA	Automatic watering system
Cage, rat 1	House rats	0.02	Technician	Hold < 5 rats	360	X		2	22x12.5x8	NA	NA
Cage, mouse 1	House mice	0.01	Technician	Hold < 5 mice	720	X		1	9.25x12.5x8	NA	NA
Feeder, rat 1	Hold diet: pellet or meal	0.02	Technician	900 gms	360	X		1	4x5x5 4x4x7	NA	NA
Feeder, mouse 1	Hold diet: pellet or meal	0.01	Technician	150 gms	720	X		1 1	3x4x4 3x3x6	NA	NA
Balance, 1200 or 4400 gm cap 1	Weigh rodents, feeders, etc.	0.30	Technician	20 cages (animals & feeder per hour)	1		X	10	3x14x7	110	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/6/81Complete by Jones, JorgensenArea Laboratory No. 2**Equipment List**Title Subchronic Oral Exposure Area, Rodent

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area ^(b)	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Table, utility 1	Hold balance, feeders, etc.	0.30	Technician	NA	1		X	80 60x30x30	NA	Casters
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	5		X	800 72x30x108	110	NA
Worktable w/sink 1	Work area	3.5	Technician	NA	4		X	500 84x29x37	NA	NA
Balance 1	Feed weighing	3.7 ±0.10	Technician	100 measurements/hr	1		X	10 8x12x4	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.5	Technician	NA	Variable			Variable	110 or NA	NA

- (1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/6/81Complete by Jones, JorgensenArea Laboratory No. 3Title Chronic Oral Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)		
Cage Rack, 30 rat cages or 60 mouse cages	Hold cages	2.2	Technician	Hold < 150 rats or 300 mice	12		X	400	72x30x72	NA	Automatic watering system
Cage, rat	House rats	0.02	Technician	Hold < 5 rats	360	X		2	22x12.5x8	NA	NA
Cage, mouse	House mice	0.01	Technician	Hold < 5 mice	720	X		1	9.25x12.5x8	NA	NA
Feeder, rat	Hold diet: pellet or meal	0.02	Technician	900 gms	360	X		1	4x5x5 4x4x7	NA	NA
Feeder, mouse	Hold diet: pellet or meal	0.01	Technician	150 gms	720	X		1 1	3x4x4 3x3x6	NA	NA
Balance, 1200 or 4400 gm cap	Weigh rodents, feeders, etc.	0.30	Technician	20 cages (animals & feeder per hour)	1		X	10	3x14x7	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/6/81

Complete by Jones, Jorgensen

Area Laboratory No. 3

Title Chronic Oral Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)	
Table, utility 1	Hold balance, feeders, etc.	0.30	Technician	NA	1		X	80	60x30x30	NA Casters
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	5		X	800	72x30x108	110 NA
Worktable 1	Work area	3.5	Technician	NA	4		X	500	84x29x37	NA NA
Balance 1	Feed weighing	3.7 ±0.10	Technician	100 measurements/hour	1		X	10	8x12x4	110 NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.5	Technician	NA	Variable			Variable	110 or NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/6/81
 Complete by Jones, Jorgensen
 Area Laboratory No. 4
 Title Subchronic Oral Exposure Area, Dog

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)	
Balance, 25 kg cap 1	Weigh dogs	6.0	Technician	40 dogs per hour	1		X	200	36x36x60	110 NA
Balance, 4400 gm cap 1	Weigh food containers	0.30	Technician	40 weights per hour	1		X	10	8x14x7	110 NA
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	2		X	800	72x30x108	110 NA
Dog pen complete with feeders and watering system 1	Housing for dogs during studies	1.5	Technician	2	60		X	200	48x96x72	NA Automatic watering system
Additional Equipment 1	Miscellaneous small items to completely equip area	2.0	Technician	NA	Variable			Variable	110 or NA	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81

Complete by Ronald N. Shiotsuka

Area Laboratory No. 5

Title Acute Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000/yr)	Operator Title	Capacity of Equipment (throughput per unit of time)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Optical particle counter 1	Measure aerosol concentration	4.0 ± 2.0	Aerosol chemist or toxicologist	Real-time analysis	1	X		7	8x8x8	110	Strip chart recorder
Optical particle size analyzer 1	Determine aerosol particle size distribution	6.5 ± 0.5	Aerosol chemist or toxicologist	Real-time analysis	3	X		30	24x30x10	110	NA
Cascade impactor 1	Collect fractionated samples and determine particle size distribution	3.0 ± 1.0	Aerosol chemist or toxicologist	2 runs/day	1		X	10	3x3x10	NA	Vacuum pump
Pumps 1	For chamber atmosphere sampling	0.2 ± 0.1	Laboratory technician	NA	10	X		4	5x11x5	110	NA
Fluidized bed generator (small) 1	Generate particulate aerosols for small chambers	5.0 ± 0.5	Laboratory technician, or HVAC engineer	NA	1	X		30	16x10x14	110	Filtered, dried and pressurized (60 psig) air supply
Fluidized bed generator (large) 1	Generate particulate aerosols for medium or large size chambers	7.0 ± 1.0	Laboratory technician, toxicologist, or HVAC engineer	NA	2	X		60	30x16x20	110	Same requirement as for small FBC above

- (1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by Ronald N. Shiozuka

Area Laboratory No. 5

Title Acute Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^a	Operator Title	Capacity of Equipment (Throughput per unit of time) ^b	No. Required for the area/lab	Expected Life		Size		Voltage Reqm. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Multi-channel analyzer 1	Record output of particle size analyzer	6.0 ± 1.0	Toxicologist or laboratory technician	Real-time analysis	1	X		25	9x20x10	110	NA
Strip-chart recorder (2-channel) 1	Record output of particle counter during chamber calibration	1.5 ± 0.3	Staff	NA	2	X		5	16x10x4	110	NA
Portable hygrothermograph 1	Rapid monitoring of areas not covered by computer-interactive sensors	0.3 ± 0.1	Instrument operator	NA	1	X		3	12x6x14	NA	NA
Nebulizer 1	Generate liquid aerosols	0.6 ± 0.1	Toxicologist or aerosol chemist	NA	3		X	15	7x9x13	110	NA
Anemometer 1	Calibrate chamber air flow	0.8 ± 0.1	Aerosol chemist or toxicologist	NA	1	X		3	5x7x2	110	NA
Gas chromatograph and control module 1	Dedicated to sampling chamber atmosphere	10.0 ± 3.0	Laboratory technician	Samples 10/hr	1	X		300	48x18x24	220	Vent for exhaust gases

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by Ronald N. Shitsuka

Area Laboratory No. 5

Equipment List

Title Acute Inhalation Exposure Area, Rodent

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.			
Infrared spectrophotometer 1	Dedicated to sampling chamber atmosphere	15.0 ± 3.0	Toxicologist or HVAC engineer	10 samples/hour	1	X		36x18x19	110	NA
Integrated volume meters 1	For sampling chamber atmosphere (gravimetric, etc.)	0.5 ± 0.1	Laboratory technician or aerosol chemist	NA	4	X		16x8x24	NA	Vacuum pump
Magneholic gage 1	Measure chamber static pressure, air flow, etc.	0.05 ± 0.01	Aerosol chemist or toxicologist	NA	80	X		4x1x4	NA	NA
Rotameters 1	Flow rate determination eg. test gas input to chambers	0.2 ± 0.05	Toxicologist	NA	20	X		1x1x12	NA	NA
Electronic balance, top loader 1	Weigh animals (computer interactive)	3.0 ± 0.1	Animal Technician	Samples 40/hr	3	X		6x10x13	110	NA
Analytical balance (microgram) 1	Gravimetric analysis of aerosols	8.0 ± 2.0	Toxicologist or laboratory technician	Samples 40/hr	1		X	12x18x16	110	"Vibration-free" table

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by Ronald N. Shiotsuka
 Area Laboratory No. 5
 Title Acute Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$1000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs.	>10 yrs.	Wt. (lbs)	Dimen. ^(c) (in.)	
Exposure chamber, (stainless steel and glass) 1	Acute exposure of rodents	3.0 ± 1.0	Toxicologist	440 rats	8		X	300	27x27x84	110 Conditioned HEPA filtered air for chambers and rooms; scrubbers/filters for exhaust air
Cages, wire (stainless steel) 1	House rodents during exposure	0.03 ± .01	Animal technician	± 5 rats/cage	32		X	2	8x10x8	NA
Walk-in safety hood 1	Containment of toxic chemicals from exposure chambers	8.0	Toxicologist	NA	8		X	800	90x42x108	110 NA
Safety hood system 1	Personnel protection from toxic chemicals during exposure	7.5	Animal technician	NA	8		X	800	72x30x108	110 NA
Worktable w/sink 1	Work area	3.5	Staff	NA	2		X	500	84x29x37	NA NA
Additional Equipment 1	Mis. small items to completely equip area	3.0 ± 1.0	Staff	NA	Variable			Variable		110 or NA NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by Ronald N. Shiotsuka

Area Laboratory No. 6

Title Subchronic Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Optical particle counter	Measure aerosol concentration	4.0±2.0	Aerosol physicist or Inhalation toxicologist	Real-time analysis	1	X		8x8x8	110	Strip chart recorder
Optical particle size analyzer	Determine aerosol particle size distribution	6.5±0.5	Aerosol physicist or Inhalation toxicologist	Real-time analysis	3	X		24x30x10	110	NA
Cascade impactor	Collect fractionated samples and determine particle size distribution	3.0±1.0	Aerosol physicist or Inhalation toxicologist	2 runs/day	1		X	3x3x10	NA	Vacuum pump
Pumps	For chamber atmosphere sampling	0.2±0.1	Laboratory technician	NA	10	X		5x11x5	110	NA
Fluidized Bed Generator (small)	Generate particulate aerosols for small chambers	5.0±0.5	Aerosol technician or Inhalation toxicologist	NA	1	X		16x10x14	110	Filtered, dried & pressurized (60psig) air supply
Fluidized Bed Generator (large)	Generate particulate aerosols for medium or large size chambers	7.0±1.0	Aerosol technician or Inhalation toxicologist	NA	2	X		30x16x20	110	Same requirement as for small FBG above

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81
 Complete by Ronald N. Shiotauka
 Area Laboratory No. 6
 Title Subchronic Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Multi-channel analyzer 1	Record output of particle size analyzer	6.0±1.0	Inhalation toxicologist or Aerosol technician	Real-time analysis	1	X		25	9x20x10	110	NA
Strip-chart Recorder (2 channel) 1	Record output of particle counter during chamber calibration	1.5±0.3	All scientists & technicians	NA	2	X		5	16x10x4	110	NA
Portable hygrothermograph 1	Rapid monitoring of areas not covered by computer-interactive sensors	0.3±0.1	Inhalation chamber operator	NA	1	X		3	12x4x14	NA	NA
Nebulizer 1	Generate liquid aerosols	0.6±0.1	Inhalation toxicologist or aerosol physicist	NA	3		X	15	7x9x13	110	NA
Anemometer 1	Calibrate chamber air flow	0.8±0.1	Aerosol physicist or Inhalation toxicologist	NA	1	X		3	5x7x2	110	NA
Gas chromatograph & control module 1	Dedicated to sampling chamber atmosphere	10±3.0	Chemistry technician or GC operator	Samples 10/hr	1	X		300	48x18x24	220	Vent for exhaust gases

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Equipment List

Date 2/12/81
 Complete by Ronald N. Shiozuka
 Area Laboratory No. 6
 Title Subchronic Inhalation Exposure Area, Rodent

Equipment Item	Function	Estimated Cost (\$000/a)	Operator Title	Capacity of Equipment (throughput per unit of time)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen ³ (in.)		
Infrared Spectrophotometer 1	Dedicated to sampling chamber atmosphere	15.0±3.0	Inhalation chamber operator (pri) or Inhalation toxicologist	Samples 25/day	1	X		50	36x18x9	110	NA
Integrated volume meters 1	For sampling chamber atmosphere (gravimetric, etc)	0.5±0.1	Laboratory technician or Aerosol chemist	NA	4	X		15	16x8x24	NA	Vacuum pump
Magnehelic gage 1	Measure chamber static pressure, air flow, etc.	0.05 ⁺ 0.01	Aerosol physicist or Inhalation toxicologist	NA	80	X		2	4x1x4	NA	NA
Rotameters 1	Flow rate determination eg. test gas input to chambers	0.2 [±] 0.05	Inhalation toxicologist	NA	20	X		1	1x1x12	NA	NA
Electronic balance, top loader 1	Weigh animals (computer interactive)	3.0±0.1	Laboratory animal technician	Samples 40/hr	3	X		15	6x10x13	110	NA
Analytical balance (microgram) 1	Gravimetric analysis of aerosols	8.0±2.0	Inhalation toxicologist or Analytical chemist	Samples 40/hr	1		X	20	12x18x16	110	"Vibration-free" table

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81Complete by Ronald N. ShiotsukaArea Laboratory No. 6

Equipment List

Title Subchronic Inhalation Exposure Area, Rodent

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Dimen (in.)		
Exposure Chamber (stainless steel & glass)	Subchronic and other multiple exposures of rodents	5.0±2.0	Inhalation chamber operator	≤ 60 rats	8		X	36x36x84	110	Conditioned, HEPA filtered air for chambers & room; scrubbers/filters for exhaust air
Cage racks with watering system and feed troughs	House rodents 24 hours/day	5.0±1.0	Laboratory animal technician	1 rat/cage	32		X	26x16x8	NA	Automatic watering system built into chambers
Special purpose exposure chambers (stainless steel & glass)	Novel exposure regimens eg. short-term, high level exposures repeated several times/day, for several days	7.0±2.0	Inhalation chamber operator	≤ 120 rats	4		X	72x36x84	110	Same requirement for air handling as above chambers
Safety Hood System	Personnel protection from toxic chemicals during exposure	7.5	Laboratory animal technician	NA	7		X	72x30x108	110	NA
Worktable w/sink	Work area	3.5	Technician	NA	4		X	84x29x37	NA	NA
Additional Equipment	Miscellaneous small items to completely equip area	6.0	Technician	NA	Variable			Variable	110 or NA	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81
 Complete by Ronald N. Shiotzuka
 Area Laboratory No. 7
 Title Chronic Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	>10 yrs	Wt. (lbs)	Dimen.(c) (in.)		
Optical particle counter 1	Measure aerosol concentration	4.0 $\pm$ 2.0	Aerosol physicist or Inhalation toxicologist	Real-time analysis	1	X		7	8x8x8	110	Strip chart recorder
Optical particle size analyzer 1	Determine aerosol particle size distribution	6.5 $\pm$ 0.5	Aerosol physicist or Inhalation toxicologist	Real-time analysis	3	X		30	24x30x10	110	NA
Cascade impactor 1	Collect fractionated samples and determine particle size distribution	3.0 $\pm$ 1.0	Aerosol physicist or Inhalation toxicologist	2 runs/day	1	X		10	3x3x10	NA	Vacuum pump
Pumps 1	For chamber atmosphere sampling	0.2 $\pm$ 0.1	Laboratory technician	NA	10	X		4	5x11x5	110	NA
Fluidized Bed Generator (small) 1	Generate particulate aerosols for small chambers	5.0 $\pm$ 0.5	Aerosol technician or Inhalation toxicologist	NA	1	X		30	16x10x14	110	Filtered, dried & pressurized (60psig) air supply
Fluidized Bed Generator (large) 1	Generate particulate aerosols for medium or large size chambers	7.0 $\pm$ 1.0	Aerosol technician or Inhalation toxicologist	NA	2	X		60	30x16x20	110	Same requirement as for small FBC above

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81
 Complete by Ronald N. Shiotaka
 Area Laboratory No. 7
 Title Chronic Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/tab	Expected Life		Size		Voltage Recept. (v)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Multi-channel analyzer 1	Record output of particle size analyzer	6.0±1.0	Inhalation toxicologist or Aerosol technician	Real-time analysis	1	X		25	9x20x10	110	NA
Strip-chart Recorder (2 channel) 1	Record output of particle counter during chamber calibration	1.5±0.3	All scientists & technicians	NA	2	X		5	16x10x4	110	NA
Portable hygrothermograph 1	Rapid monitoring of areas not covered by computer-interactive sensors	0.3±0.1	Inhalation chamber operator	NA	1	X		3	12x4x14	NA	NA
Nebulizer 1	Generate liquid aerosols	0.6±0.1	Inhalation toxicologist or Aerosol physicist	NA	3		X	15	7x9x13	110	NA
Anemometer 1	Calibrate chamber air flow	0.8±0.1	Aerosol physicist or Inhalation toxicologist	NA	1	X		3	5x7x2	110	NA
Gas chromatograph & control module 1	Dedicated to sampling chamber atmosphere	10±3.0	Chemistry technician or GC operator	10/hr	1	X		300	48x18x24	220	Vent for exhaust gases

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81

Complete by Ronald N. Shiotsuka

Area Laboratory No. 7

Equipment List

Title Chronic Inhalation Exposure Area, Rodent

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt (lbs)	Dimen ^(c) (in)		
Infrared Spectrophotometer 1	Dedicated to sampling chamber atmosphere	15.0±3.0	Inhalation chamber operator (pri) or Inhalation toxicologist	Samples 25/day	1	X		50	36x18x9	110	NA
Integrated volume meters 1	For sampling chamber atmosphere (gravimetric, etc)	0.5±0.1	Laboratory technician or Aerosol chemist	NA	4	X		15	16x8x24	NA	Vacuum pump
Magnehelic gage 1	Measure chamber static pressure, air flow, etc.	0.05±0.01	Aerosol physicist or Inhalation toxicologist	NA	80	X		2	4x1x4	NA	NA
Rotameters 1	Flow rate determination eg. test gas input to chambers	0.2±0.05	Inhalation toxicologist	NA	20	X		1	1x1x12	NA	NA
Electronic balance, top loader 1	Weigh animals (computer interactive)	3.0±0.1	Laboratory animal technician	Samples 40/hr	3	X		15	6x10x13	110	NA
Analytical balance (microgram) 1	Gravimetric analysis of aerosols	8.0±2.0	Inhalation toxicologist or Analytical chemist	Samples 40/hr	1		X	20	12x18x16	110	"Vibration-free" table

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81
 Complete by Ronald N. Shiotsuka
 Area Laboratory No. 7
 Title Chronic Inhalation Exposure Area, Rodent

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)		
Exposure Chamber (stainless steel & glass) 1	Chronic or life-time exposure of rodents	10±2	Inhalation chamber operator	≤ 240 rats	4		X	1000	110	Conditioned, HEPA filtered air for chambers and room; scrubbers and filters for exhaust air
Multi-tiered cage racks with watering system and feed troughs, (rack on wheels) 1	24-hour housing of rodents	6.0±1.0	Laboratory animal technician	1 rat/cage	16		X	200	NA	Automatic watering system built into chambers
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Laboratory animal technician	NA	7		X	800	110	NA
Worktable w/sink 1	Work area	3.5	Technician	NA	4		X	500	NA	NA
Additional Equipment	Miscellaneous small items to completely equip area	3.0	Technician	NA	Variable			Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81

Complete by Ronald N. Shiozuka

8

Area Laboratory No.

Title Acute Inhalation Exposure Area, Primate

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^a	Operator Title	Capacity of Equipment (throughput per unit of time) ^b	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Optical particle counter 1	Measure aerosol concentration	4.0±2.0	Aerosol physicist or Inhalation toxicologist	Real-time analysis	1	X		7	8x8x8	110	Strip chart recorder
Optical particle size analyzer 1	Determine aerosol particle size distribution	6.5±0.5	Aerosol physicist or Inhalation toxicologist	Real-time analysis	3	X		30	24x30x10	110	NA
Cascade impactor 1	Collect fractionated samples and determine particle size distribution	3.0±1.0	Aerosol physicist or Inhalation toxicologist	2 runs/day	1		X	10	3x3x10	NA	Vacuum pump
Pumps 1	For chamber atmosphere sampling	0.2±0.1	Laboratory technician	NA	10	X		4	5x11x5	110	NA
Fluidized Bed Generator (small) 1	Generate particulate aerosols for small chambers	5.0±0.5	Aerosol technician or Inhalation toxicologist	NA	1	X		30	16x10x14	110	Filtered, dried & pressurized (60psig) air supply
Fluidized Bed Generator (large) 1	Generate particulate aerosols for medium or large size chambers	7.0±1.0	Aerosol technician or Inhalation toxicologist	NA	2	X		60	30x16x20	110	Same requirement as for small FBG above

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/13/81Complete by Ronald N. ShiotsukaArea Laboratory No. 8

Equipment List

Title Acute Inhalation Exposure Area, Private

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (Throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)	
Multi-channel analyzer 1	Record output of particle size analyzer	6.0±1.5	Inhalation toxicologist or Aerosol technician	Real-time analysis	1	X		25	9x20x10	110 NA
Strip-chart Recorder (2 channel) 1	Record output of particle counter during chamber calibration	1.5±0.3	All scientists & technicians	NA	2	X		5	16x10x4	110 NA
Portable hygrothermograph 1	Rapid monitoring of areas not covered by computer-interactive sensors	0.3±0.1	Inhalation chamber operator	NA	1	X		3	12x4x14	NA NA
Nebulizer 1	Generate liquid aerosols	0.6±0.1	Inhalation toxicologist or Aerosol physicist	NA	3		X	15	7x9x13	110 NA
Anemometer 1	Calibrate chamber air flow	0.8±0.1	Aerosol physicist or Inhalation toxicologist	NA	1	X		3	5x7x2	110 NA
Gas chromatograph & control module 1	Dedicated to sampling chamber atmosphere	10±3.0	Chemistry technician or GC operator	Samples 10/hr	1	X		300	48x18x24	220 Vent for exhaust gases

- (1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by Ronald N. Shiotaka
 Area Laboratory No. 8

Equipment List

Title Acute Inhalation Exposure Area, Primate

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.			
Infrared Spectrophotometer 1	Dedicated to sampling chamber atmosphere	15±3.0	Inhalation chamber operator (pri) or Inhalation toxicologist	Samples 25/day	1	X		50 36x18x9	110	NA
Integrated volume meters 1	For sampling chamber atmosphere (gravimetric, etc)	0.5±0.1	Laboratory technician or Aerosol chemist	NA	4	X		15 16x8x24	NA	Vacuum pump
Magnehelic gage 1	Measure chamber static pressure, air flow, etc.	0.05±0.01	Aerosol physicist or Inhalation toxicologist	NA	80	X		2 4x1x4	NA	NA
Rotameters 1	Flow rate determination eg. test gas input to chambers	0.2±0.05	Inhalation toxicologist	NA	20 various sizes	X		1 1x1x12	NA	NA
Electronic balance, top loader 1	Weigh animals (computer interactive)	3.0±0.1	Laboratory animal technician	Samples 40/hr	3	X		15 6x10x13	NA	NA
Analytical balance (microgram) 1	Gravimetric analysis of aerosols	8.0±2.0	Inhalation toxicologist or Analytical chemist	Samples 40/hr	1		X	20 12x18x16	110	"Vibration-free" table

- (1) Essential
 (2) Desirable
 (3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Equipment List

Date 2/12/81Complete by Ronald N. ShiotsukaArea Laboratory No. 8Title Acute Inhalation Exposure Area, Primate

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the are/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Exposure Chamber (stainless steel and glass) 1	Acute exposure of primates	10.2	Inhalation chamber operator	12-20 monkeys/chamber	4		X	72x72x132 Wt. (lbs.) Dimen (in.)	110	Conditioned, HEPA filtered air from chambers and room; scrubbers and filters for exhaust air
Cages, holding baboon 1	Animal housing during exposure	1.2	Caretaker	1/cage	20	X		60x26x72	NA	Rack mounted squeeze back
Cages, holding monkey 1	Animal housing during exposure	1.0	Caretaker	1/cage	20	X		60x26x72	NA	Rack mounted squeeze back
Walk-in hood 1	Containment of toxic chemicals from exposure chambers	8	Inhalation chamber operator	NA	4		X	Var. 90x42x108	110	NA
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	6		X	72x30x108	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	3.0	Technician	NA	Variable			Variable	110 or NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by Ronald N. Shiotsuka

Area Laboratory No. 9

Equipment List

Title Subchronic Inhalation Exposure Area, Primate

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requir (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Optical particle counter 1	Measure aerosol concentration	4.0±2.0	Aerosol physicist or Inhalation toxicologist	Real-time analysis	1	X		7	8x8x8	110	Strip-chart recorder
Optical particle size analyzer 1	Determine aerosol particle size distribution	6.5±0.5	Aerosol physicist or Inhalation toxicologist	Real-time analysis	3	X		30	24x30x10	110	NA
Cascade impactor 1	Collect fractionated samples and determine particle size distribution	3.0±1.0	Aerosol physicist or Inhalation toxicologist	2 runs/day	1		X	10	3x3x10	NA	Vacuum pump
Pumps 1	For chamber atmosphere sampling	0.2±0.1	Laboratory technician	NA	10	X		4	5x11x5	110	NA
Fluidized Bed Generator (small) 1	Generate particulate aerosols for small chambers	5.0±0.5	Aerosol technician or Inhalation toxicologist	NA	1	X		30	16x10x14	110	Filtered, dried & pressurized (60psig) air supply
Fluidized Bed Generator (large) 1	Generate particulate aerosols for medium or large size chambers	7.0±1.0	Aerosol technician or Inhalation toxicologist	NA	2	X		60	30x16x20	110	Same requirement as for small FBG above

(1) Essential

(2) Desirable

(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/13/81
 Complete by Ronald N. Shifotsuka
 Area Laboratory No. 9

Equipment List

Title Subchronic Inhalation Exposure Area, Primate

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Multi-channel analyzer 1	Record output of particle size analyzer	6.0±1.5	Inhalation toxicologist or Aerosol technician analysis	Real-time	1	X		25	9x20x10	110	NA
Strip-chart Recorder (2 channel) 1	Record output of particle counter during chamber calibration	1.5±0.3	All scientists & technicians	NA	2	X		5	16x10x4	110	NA
Portable hygrothermograph 1	Rapid monitoring of areas not covered by computer-interactive sensors	0.3±0.1	Inhalation chamber operator	NA	1	X		3	12x4x14	NA	NA
Nebulizer 1	Generate liquid aerosols	0.6±0.1	Inhalation toxicologist or Aerosol physicist	NA	3		X	15	7x9x13	110	NA
Anemometer 1	Calibrate chamber air flow	0.8±0.1	Aerosol physicist or Inhalation toxicologist	NA	1	X		3	5x7x2	110	NA
Gas chromatograph & control module 1	Dedicated to sampling chamber atmosphere	10±3.0	Chemistry technician or GC operator	Samples 10/hr	1	X		300	48x18x24	220	Vent for exhaust gases

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by Ronald N. Shiozuka
 Area Laboratory No. 9
 Title Subchronic Inhalation Area, Primate

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Infrared spectrophotometer 1	Dedicated to sampling chamber atmosphere	15 ⁺ 3.0	Inhalation chamber operator (pri) or Inhalation toxicologist	Samples 25/day	1	X		50	36x18x9	110	NA
Integrated volume meters 1	For sampling chamber atmosphere (gravimetric, etc)	0.5 ⁺ 0.1	Laboratory technician or Aerosol chemist	NA	4	X		15	16x8x24	NA	Vacuum pump
Magnehelic gage 1	Measure chamber static pressure, air flow, etc.	0.05 ⁺ 0.01	Aerosol physicist or Inhalation toxicologist	NA	80	X		2	4x1x4	NA	NA
Rotameters 1	Flow rate determination eg. test gas input to chambers	0.2 ⁺ 0.05	Inhalation toxicologist	NA	20	X		1	1x1x12	NA	NA
Electronic balance, top loader 1	Weigh animals (computer interactive)	3.0 ⁺ 0.1	Laboratory animal technician	Samples 40/hr	3	X		15	6x10x13	110	NA
Analytical balance (microgram) 1	Gravimetric analysis or aerosols	8.0 ⁺ 2.0	Inhalation toxicologist or Analytical chemist	Samples 40/hr	1		X	20	12x18x16	110	"Vibration-free" table

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by Ronald N. Shiotsuka
 Area Laboratory No. 9

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Exposure Chamber (stainless steel and glass) 1	Subchronic exposure of primates	10.2	Inhalation chamber operator	12-20 monkeys/chamber	8		X	72x72x132	110	Conditioned, HEPA filtered air from chambers and room; scrubbers and filters for exhaust air
Cages, holding baboon 1	Animal housing during exposure	1.2	Caretaker	1/cage	20	X		60x26x72	NA	Rack mounted squeeze back
Cages, holding monkey 1	Animal housing during exposure	1.0	Caretaker	1/cage	20	X		60x26x72	NA	Rack mounted squeeze back
Worktable w/sink 1	Work area	3.5	Technician	NA	2		X	84x29x37	NA	NA
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	5		X	72x30x108	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	3.0	Technician	NA	Variable			Variable	110 or NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by Ronald N. Shiotauka
 Area Laboratory No. 10
 Title Chronic Inhalation Exposure Area, Primate

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen (in)		
Optical particle counter 1	Measure aerosol concentration	4.0 ⁺ 2.0	Aerosol physicist or Inhalation toxicologist	Real-time analysis	1	X		7	8x8x8	110	Strip-chart recorder
Optical particle size analyzer 1	Determine aerosol particle size distribution	6.5 ⁺ 0.5	Aerosol physicist or Inhalation toxicologist	Real-time analysis	3	X		30	24x30x10	110	NA
Cascade impactor 1	Collect fractionated samples and determine particle size distribution	3.0 ⁺ 1.0	Aerosol physicist or Inhalation toxicologist	2 runs/day	1		X	10	3x3x10	NA	Vacuum pump
Pumps 1	For chamber atmosphere sampling	0.2±0.1	Laboratory technician	NA	10	X		4	5x11x5	110	NA
Fluidized Bed Generator (small) 1	Generate particulate aerosols for small chambers	5.0 ⁺ 0.5	Aerosol technician or Inhalation toxicologist	NA	1	X		30	16x10x14	110	Filtered, dried & pressurized (60psig) air supply
Fluidized Bed Generator (large) 1	Generate particulate aerosols for medium or large size chambers	7.0 ⁺ 1.0	Aerosol technician or Inhalation toxicologist	NA	2	X		60	30x16x20	110	Same requirement as for small FBG above

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/13/81
 Complete by Ronald N. Shiotsuka
 Area Laboratory No. 10
 Title Chronic Inhalation Exposure Area, Primate

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. ^(c) (in)		
Multi-channel analyzer 1	Record output of particle size analyzer	6.0 [±] 1.5	Inhalation toxicologist or Aerosol technician	Real-time analysis	1	X		25	9x20x10	110	NA
Strip-chart Recorder (2 channel) 1	Record output of particle counter during chamber calibration	1.5 [±] 0.3	All scientists & technicians	NA	2	X		5	16x10x4	110	NA
Portable hygrothermograph 1	Rapid monitoring of areas not covered by computer-interactive sensors	0.3 [±] 0.1	Inhalation chamber operator	NA	1	X		3	12x4x14	NA	NA
Nebulizer 1	Generate liquid aerosols	0.6 [±] 0.1	Inhalation toxicologist or Aerosol physicist	NA	3		X	15	7x9x13	110	NA
Anemometer 1	Calibrate chamber air flow	0.8 [±] 0.1	Aerosol physicist or Inhalation toxicologist	NA	1	X		3	5x7x2	110	NA
Gas chromatograph & control module 1	Dedicated to sampling chamber atmosphere	10 [±] 3.0	Chemistry technician or GC operator	Samples 10/hr	1	X		300	48x18x24	220	Vent for exhaust gases

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81
 Complete by Ronald N. Shiotzuka
 Area Laboratory No. 10
 Title Chronic Inhalation Exposure Area, Primate

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Infrared Spectrophotometer	Dedicated to sampling chamber atmosphere	15 [±] 3.0	Inhalation chamber operator (pri) or Inhalation toxicologist	Samples 25/day	1	X		36x18x9	110	NA
Integrated volume meters	For sampling chamber atmosphere (gravimetric, etc)	0.5 [±] 0.1	Laboratory technician or Aerosol chemist	NA	4	X		15 16x8x24	NA	Vacuum pump
Magnehelic gage	Measure chamber static pressure, air flow etc.	0.05 [±] 0.01	Aerosol physicist or Inhalation toxicologist	NA	80	X		2 4x1x4	NA	NA
Rotameters	Flow rate determination, eg. test gas input to chambers	0.2 [±] 0.05	Inhalation toxicologist	NA	20	X		1 1x1x12	NA	NA
Electronic balance, top loader	Weigh animals (computer interactive)	3.0 [±] 0.1	Laboratory animal technician	Samples 40/hr	3	X		15 6x10x13	110	NA
Analytical balance (microgram)	Gravimetric analysis of aerosols	8.0 [±] 2.0	Inhalation toxicologist or Analytical chemist	Samples 40/hr	1		X	20 12x18x16	110	"Vibration-free" table

- (a) Estimated average cost for item to include a cost range around the average
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81Complete by Ronald N. ShiotsukaArea Laboratory No. 10

Equipment List

Title Chronic Inhalation Exposure Area, Primate

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Exposure Chamber (stainless steel and glass) 1	Chronic exposure of primates	10 ^{±2}	Inhalation chamber operator	12-20 monkeys/chamber	4		X	72x72x132	110	Conditioned, HEPA filtered air from chambers and room; scrubbers & filters for exhaust air
Cages, holding baboon 1	Animal housing during exposure	1.2	Caretaker	1/cage	20	X		60x26x72	NA	Rack mounted squeeze back
Cages, holding monkey 1	Animal housing during exposure	1.0	Caretaker	1/cage	20	X		60x26x72	NA	Rack mounted squeeze back
Worktable w/sink 1	Work Area	3.5	Technician	NA	4		X	84x29x37	NA	NA
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	6		X	72x30x108	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	3.0	Technician	NA	Variable			Variable	110 or NA	NA

- (1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/4/81
 Complete by S. Unwin
 Area Laboratory No. 11
 Title Dermal Testing Area, Rabbit

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)	
Hair Clippers 1	Shave animals	0.10	Technician	NA	2	X		2	2d1a x 8	110
Cages 1	House animals	0.57	Technician	NA	40		X	8	24x24x16	NA
Restrainers 1	Restrain animals	0.15	Technician	NA	10		X	2	7x18x8	NA
Lab Cart 1	Perform test	0.16	Technician	NA	1	X		45	30x20x34	NA
Safety Hood System 1	Personnel protection from volatile and highly toxic chemicals during exposures	7.5	Technician	NA	3		X	800	72x30x108	110
Worktable w/sink 1	Work table	3.5	Technician	NA	1		X	500	84x29x37	NA

- (a) Estimated average cost for item to include a cost range around the average
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/4/81
 Complete by S. Unwin
 Area Laboratory No. 11

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs.)		
Additional Equipment	Miscellaneous small items to completely equip area	2.8	Technician	NA	Variable			Variable	110 or NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/4/81
 Complete by S. Unwin
 Area Laboratory No. 12
 Title Ocular Testing Area, Rabbit

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimension (in.)		
Rabbit cages 1	Housing of animals	0.48	Technician	NA	12		X	8	24x24x16	NA	NA
Ophthalmoscope 1	Exam of eyes	0.12	Technician	NA	1	X		Variable		110	NA
UV Lamp 1	Exam of eyes	0.10	Technician	NA	1	X		5	9x10x10	110	NA
Lab Cart 1	Performance of exam	0.16	Technician	NA	1	X		45	30x20x34	NA	NA
Balance 1	Weighting of animals	0.44	Technician	Samples 40/hr	1		X	10	8x14x7	110	Spec. consideration: Used for other acute tests; eg. Dermal, etc.
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	3		X	800	72x30x108	110	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/6/81Complete by S. UnwinArea Laboratory No. 12

Equipment List

Title Ocular Testing Area, Rabbit

Equipment Item	Function	Estimated Cost (\$000's)	Operator Title	Capacity of Equipment (Throughput per unit of time)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Worktable w/sink 1	Work Area	3.5	Technician	NA	1		X	84x29x37	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	2.3	Technician	NA	Variable			Variable	110 or NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by Ronald N. Shitsuka

13

Area Laboratory No.

Title Behavioral Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life > 5 yrs.	Size		Voltage Reqm. (V)	Special Requirements
							Wt. (lbs)	Dimen ^(c) (in.)		
Optical particle counter 1	Measure aerosol concentration	4.0 $\pm$ 2.0	Aerosol physicist or Inhalation toxicologist	Real-time analysis	2	X	7	8x8x8	110	Strip chart recorder
Optical particle size analyzer 1	Determine aerosol particle size distribution	6.5 $\pm$ 0.5	Aerosol physicist or Inhalation toxicologist	Real-time analysis	4	X	30	24x30x10	110	NA
Cascade impactor 1	Collect fractionated samples and determine particle size distribution	3.0 $\pm$ 1.0	Aerosol physicist or Inhalation toxicologist	2 runs/day	2	X	10	3x3x10	NA	Vacuum pump
Pumps 1	For chamber atmosphere sampling	0.2 $\pm$ 0.1	Laboratory technician	NA	10	X	4	5x11x5	110	NA
Fluidized Bed Generator (large) 1	Generate particulate aerosols for medium or large size chambers	7.0 $\pm$ 1.0	Aerosol technician or Inhalation toxicologist	NA	5	X	60	30x16x20	110	Filtered, dried & pressurized (60psig) air supply
Multi-channel analyzer 1	Record output of particle size analyzer	6.0 $\pm$ 1.0	Inhalation toxicologist or Aerosol technician	Real-time analysis	2	X	25	9x20x10	110	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81
 Complete by Ronald N. Shiotsuka
 Area Laboratory No. 11
 Title Behavioral Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life	Size		Voltage Requi. (V)	Special Requirements
							Wt. (lbs)	Dimen. ^(c) (in.)		
Strip-chart Recorder (2 channel)	Record output of particle counter during chamber calibration	1.5±0.3	All scientists & technicians	NA	5	X	5	16x10x4	110	NA
Portable hygrothermograph	Rapid monitoring of areas not covered by computer-interactive sensors	0.3±0.1	Inhalation chamber operator	NA	2	X	3	12x4x14	NA	NA
Nebulizer	Generate liquid aerosols	0.6±0.1	Inhalation toxicologist or Aerosol physicist	NA	5	X	15	7x9x13	110	NA
Anemometer	Calibrate chamber air flow	0.8±0.1	Aerosol physicist or Inhalation toxicologist	NA	5	X	3	5x7x2	110	NA
Gas chromatograph & control module	Dedicated to sampling chamber atmosphere	10±3.0	Chemistry technician or GC operator	10/hr	2	X	300	48x18x24	220	Vent for exhaust gases
Infrared Spectrophotometer	Dedicated to sampling chamber atmosphere	15±3.0	Inhalation chamber operator (pri) or Inhalation toxicologist	Samples 25/day	2	X	50	36x18x9	110	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by Ronald N. Shiotsuka/KFK
 Area Laboratory No. 13

Equipment List

Title Behavioral Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Integrated volume meters 1	For sampling chamber atmosphere (gravimetric, etc.)	0.5 ⁺ 0.1	Laboratory technician or Aerosol chemist	NA	5	X		15	16x8x24	NA	Vacuum pump
Magnehelic gage 1	Measure chamber static pressure, air flow etc.	0.05 ⁺ 0.01	Aerosol physicist or Inhalation toxicologist	NA	100	X		2	4x1x4	NA	NA
Potameters 1	Flow rate determination, eg. test gas input to chambers	0.2 ⁺ 0.05	Inhalation toxicologist	NA	25 Various Sizes	X		1	1x1x12	NA	NA
Analytical balance (microgram) 1	Gravimetric analysis of aerosols	8.0 ⁺ 2.0	Inhalation toxicologist or Analytical chemist	Samples 40/hr	2		X	20	12x18x16	110	"Vibration-free" table
Physiol. Recorder 1	Record physio. events from 4 chambers controlled by control panel. Data also recorded on tape.	15.0	Physiologist Pharmacologist Psychologist Technician	NA	4	X		400	36x36x60	110	Grounding special wiring to control panel
Tape recorder, FM Multichan with time encoder 1	Record physio. events from 4 chambers, controlled by control panel. Data also recorded on paper indexed both recorders.	12.0	Physiologist Pharmacologist Psychologist Technician	NA	4	X		600	24x72x36	110	Grounding special wiring to control panel

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Equipment List

Date 2/12/81
Complete by KFK

Area Laboratory No. 13

Title Behavioral Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Computer termin. 2	Records events from 4 chambers	5.0	Physiologist Pharmacologist Psychologist Technician	Variable	4	X		200	48x36x48	110	Grounding could be time sharing or floppy
Drug balance 1	Prepare solutions	6.5	Technician	Samples 40/hr	1	X		20	12x18x16	110	Digital output for recording
Animal scale 1	Monitor animal wets	1.5	Caretaker	Samples 40/hr	1	X		15	6x10x13	110	Digital output for recording Cap 0-20kg + transfer cages
Cages, transfer baboon 1	Animal transfer	1.0	Caretaker	NA	2	X		200	60x26x72	NA	Squeeze back match holding
Physiological monitors 1	Monitor physiological F'n's	10.0	Physiologist Pharmacologist Psychologist Technician- trained	NA	16	X		5	8x10x16	110	Grounding mounter with control panel non-invasive BP
Pumps, infusion of samplers 1	Sample body fluids	0.50	Physiologist Pharmacologist Psychologist Technician- trained	NA	32	X		5	5x12x5	110	Grounding indexed

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81

Complete by KFK/GES

Area Laboratory No. 13

Equipment List

Title Behavioral Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the are/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						>5 yrs.	>10 yrs.	Wt. (lbs)	Dimension (in.)		
Stimulators, physiological 1	Present cues	1.5	Physiologist Pharmacologist Technician- trained	NA	16	X		30	19x10x10	110	Grounding indexed
I/O electronic & interface 1	Coupling chambers to control panels & recording devices	1.0	Physiologist Pharmacologist Technician- trained	NA	16	X		Variable		110	Grounding special wiring at installation
Manipulanda panel 1	Present sensory stimuli, allow animal to respond & receive reinforcement	1.0	Physiologist Pharmacologist Technician- trained	NA	16	X		20	36x1x48	110	Grounding special wiring at installation
Control panel 1	Monitor 4 chambers, coordinate I/O & recording modes	4.0	Physiologist Pharmacologist Technician- trained	NA	4	X		10	19x1x10	110	Grounding special wiring at installation
Special inhalation chamber for primate behavioral studies 1	Allow observation and testing of primates during subchronic inhalation exposures	25	Inhalation chamber operator	2 primates plus restraining chairs & monitoring & testing equipment	2		X	1000	72x72x132	220	Combined capabilities of primate response chamber and inhalation chamber with animal isolation and 24 hr. housing
Special inhalation chamber for rodent behavioral studies 1	Allow observation and testing of rodents during subchronic inhalation exposures	10	Inhalation chamber operator	10-12 rodents plus monitoring & testing equipment	3		X	1000	72x72x132	220	Inhalation chamber requirements plus access parts for animal monitoring & testing equipment

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81

Complete by KFK

Area Laboratory No. 13

Equipment List

Title Behavioral Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the arealab	Expected Life		Size		Voltage Reqm. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Chair, restraining baboon 1	Minimal restrain allowing monitoring of vital fns, sampling body fluids & infusing materials	1.2	Technician	8/Day	8	X		80	36x36x48	NA	Adjustable restraints to fit each animal wastes collectable for analysis
Chair, restraining monkey 1	Minimal restrain allowing monitoring of vital fns, sampling body fluids & infusing materials	1.0	Technician	8/Day	8	X		80	36x36x48	NA	Adjustable restraints to fit each animal wastes collectable for analysis
T.V. Recorders and monitors 2	Monitor ambient activity	2.5	Technician	8/Day	16	X		50	6x10x6	110	Cameras mounted on chamber to monitor activity in chamber
Recorders, event 1	Record behavioral tasks and responses	0.5	Technician	8/Day	16	X		50	18x3x10	110	Mounted at control panels monitors task, stimuli & response parallel to terminal input
Cages, holding baboon 1	Animal housing	1.2	Caretaker	On demand	4	X		200	60x26x72	NA	Ceiling mounted squeeze back
Cages, transfer monkey 1	Animal transferring	0.80	Caretaker	On demand	2	X		200	60x26x72	NA	Squeeze back match holding cage

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81Complete by KFKArea Laboratory No. 13Title Behavioral Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen ^(c) (in.)		
Cages, holding monkey 1	Animal housing	1.0	Caretaker	On demand	4	X		200	60x26x72	NA	Back mounted squeeze back
Centrifuge, preparatory 1	Prepare blood samples	0.80	Technician	Varies with rotar	2	X		425	31x24x55	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	4.8	Technician	NA	Variable			Variable	Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81Complete by Wendell W. KilgoreArea Laboratory No. 14Title Metabolism/Pharmacokinetics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt (lbs)	Dimen ^(c) (in)		
Spectrophotometer UV-Visible; digital 1	For specific or variable wave length assays	12±3.0	Biochemist	10/hr	1	X		150	36x24x24	110	NA
Spectrophotometer UV-Visible 1	For fixed wave length assays	3.5±1.0	Biochemist	10/hr	1	X		75	36x24x16	110	NA
Spectrophotometer UV-Visible small type 1	General color assays and UV absorption analysis	0.80±0.20	Biochemist	10/hr	2	X		35	24x12x12	110	NA
Glove Box 1	For handling toxic substances	2.0±0.50	Biochemist	NA	1	X		150	48x24x36	NA	NA
Refrigerator 1	Cold storage	1.0±0.20	Biochemist	NA	2	X		200	72x36x36	110	NA
Ice Machine 1	For constant supply of ice	0.80	Biochemist	NA	1	X		200	72x36x36	110	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81
 Complete by Wendell W. Kilgore
 Area Laboratory No. 14
 Title Metabolism/Pharmacokinetics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in)		
pH Meter 1	Determination of pH	0.80 ⁺ 0.50	Biochemist	Variable	2	X		10	12x12x12	110	NA
Balance, analytical (electronic) 1	Measure weight of materials	6.5 ⁺ 1.5	Biochemist	Variable	1		X	40	18x24x18	110	NA
Balance table 1	Shock resistant table for balance	0.70 ⁺ 0.30	Biochemist	NA	1		X	200	40x28x18	NA	NA
Water bath, constant temp. 1	Maintain constant temperature	1.2 ⁺ 0.30	Biochemist	Variable	2		X	75	36x24x18	110	Water supply
Water bath, circulating 1	Maintain constant temperature for short periods	0.40 ⁺ 0.15	Biochemist	Variable	2		X	25	24x24x12	110	Water supply
Centrifuge, table type 1	Centrifugation of precipitation and other biological samples	0.50 ⁺ 0.20	Biochemist	Variable	2	X		20	18x18x18	110	NA

- (1) Essential
 (2) Desirable
 (3) Ideal
- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by Wendell W. Kilgore
 Area Laboratory No. 14
 Title Metabolism/Pharmacokinetics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	>10 yrs.	Wt. (lbs)	Dimen. ^(c) (in.)		
Sample Oxidizer 1	For combustion of radioactive samples	18±3.0	Biochemist	10/hr	1	X		300	36x36x48	110	NA
Balance, animal 1	Weighing of animals	3.0±1.0	Biochemist	100/hr	1		X	25	18x18x18	110	NA
Incubator dry air 1	Incubation of samples	1.5±0.30	Biochemist	NA	1		X	100	36x36x36	110	NA
Metabolism cages 1	Metabolism studies	0.70±0.20	Biochemist	NA	5	X		10	12x12x12	NA	NA
Pump, vacuum 1	Routine lab. equipment	0.50±0.10	Biochemist	NA	2		X	50	24x36x18	110	NA
Radioactive hand monitor. G.M. tube 1	For laboratory monitoring	1.2±0.30	Biochemist	NA	1		X	5	12x12x12	115	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81

Complete by Wendell W. Kilgore

Area Laboratory No. 14

Title Metabolism/Pharmacokinetics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)		
Gas Chromatograph Mass spectrometer with data processing 1	Chemical structure identification	150 [±] 30	Analytical chemist	Variable	1	X		500	220	NA
Scintillation counter 1	Radiolabel determinations	20 [±] 5.0	Biochemist	Variable	2	X		350	110	NA
Table top computer with TV screen and digital plotter 2	Calculating and plotting data	18 [±] 5.0	Biochemist	Variable	1	X		200	110	NA
High pressure liquid chromatograph 1	Chemical separation and identification	40 [±] 5.0	Biochemist-analytical chemist	Variable	1	X		150	110	NA
Gas chromatograph (electron capture and FID detector) 1	Chemical separation and identification	30 [±] 5.0	Biochemist-analytical chemist	Variable	2	X		150	110	NA
Centrifuge, high speed-refrigerated 1	Particle and precipitate fractionation	10 [±] 2.0	Biochemist	Variable	2	X		400	110	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81
Complete by Wendell W. Kilgore
Area Laboratory No. 14
Title Metabolism/Pharmacokinetics Studies Area

Equipment List

[illegible]

- (a) Estimated average cost for item to include a cost range around the average.
- (b) Report throughput in samples per hour or 8-hour day if applicable.
- (c) Record dimensions in order, width x depth x height

(1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81
 Complete by Wendell W. Kilgore
 Area Laboratory No. 15
 Title Pharmacodynamics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Gas Chromatograph Mass spectrometer with data processing 1	Chemical structure identification	150±30	Analytical chemist	Variable	1	X		500	36x60x60	220	NA
Scintillation counter 1	Radiolabel determinations	20±5.0	Biochemist	Variable	2	X		350	36x60x40	110	NA
Table top computer with TV screen and digital plotter 2	Calculating and plotting data	18±5.0	Biochemist	Variable	1	X		200	48x36x48	110	NA
High pressure liquid chromatograph 1	Chemical separation and identification	40±5.0	Biochemist-Analytical chemist	Variable	1	X		150	36x36x24	110	NA
Gas chromatograph (electron capture and FID detector) 1	Chemical separation and identification	20±5.0	Biochemist-Analytical chemist	Variable	2	X		150	36x36x60	110	NA
Centrifuge, high speed-refrigerated 1	Particle and precipitate fractionation	10±2.0	Biochemist	Variable	2	X		400	48x36x60	110	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81

Complete by Wendell W. Kilgore

Area Laboratory No. 15

Title Pharmacodynamics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Sample Oxidizer 1	For combustion of radioactive samples	18±3.0	Biochemist	10/hr	1	X		36x36x48	110	NA
Balance, animal 1	Weighing of animals	3.0±1.0	Biochemist	100/hr	1		X	18x18x18	110	NA
Incubator dry air 1	Incubation of samples	1.5±0.30	Biochemist	NA	1		X	36x36x36	110	NA
Metabolism cages 1	Metabolism studies	0.70±0.20	Biochemist	NA	5	X		12x12x12	NA	NA
Pump, vacuum 1	Routine lab. equipment	0.50±0.10	Biochemist	NA	2		X	24x36x18	110	NA
Radioactive hand monitor. G.M. tube 1	For laboratory monitoring	1.2±0.30	Biochemist	NA	1		X	12x12x12	115	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by Wendell W. Kilgore

Area Laboratory No. 15

Title Pharmacodynamics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^a	Operator Title	Capacity of Equipment (Throughput per unit of time) ^b	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
pH Meter 1	Determination of pH	0.80 [†] 0.50	Biochemist	Variable	2	X		10	12x12x12	110	NA
Balance analytical (electronic) 1	Measure weight of materials	6.5 [†] 1.5	Biochemist	Variable	1		X	40	18x24x18	110	NA
Balance table 1	Shock resistant table for balance	0.70 [†] 0.30	Biochemist	NA	1		X	200	40x28x18	NA	NA
Water bath, constant temp. 1	Maintain constant temperature	1.2 [†] 0.30	Biochemist	Variable	2		X	75	36x24x18	110	Water supply
Water bath, circulating 1	Maintain constant temperature for short periods	0.40 [†] 0.15	Biochemist	Variable	2		X	25	24x24x12	110	Water supply
Centrifuge, table type 1	Centrifugation of precipitation and other biological samples	0.50 [†] 0.20	Biochemist	Variable	2	X		20	18x18x18	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81Complete by Hendell W. KilgoreArea Laboratory No. 15Title Pharmacodynamics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen ^(c) (in.)		
Spectrophotometer UV-Visible; digital 1	For specific or variable wave length assays	12 ⁺ 3.0	Biochemist	10/hr	1	X		150	36x24x24	110	NA
Spectrophotometer UV-Visible 1	For fixed wave length assays	3.5 ⁺ 1.0	Biochemist	10/hr	1	X		75	36x24x16	110	NA
Spectrophotometer UV-Visible, small type 1	General color assays and UV absorption analysis	0.80 ⁺ 0.20	Biochemist	10/hr	2	X		35	24x12x12	110	NA
Glove box 1	For handling toxic substances	2.0 ⁺ 0.50	Biochemist	NA	1	X		150	48x24x36	NA	NA
Refrigerator 1	Cold storage	1.0 ⁺ 0.20	Biochemist	NA	2	X		200	72x36x36	110	NA
Ice Machine 1	For constant supply of ice	0.80	Biochemist	NA	1	X		200	72x36x36	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81Complete by Hendell W. KilgoreArea Laboratory No. 15Title Pharmacodynamics Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Additional Equipment 1	Miscellaneous small items to completely equip area	1.7	Technician	NA	Variable			Variable		110 or NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/16/81

Complete by GFS

Area Laboratory No. 16

Title Oncogenic Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required (for the area/lab)	Expected Life			Voltage Reqm. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Size (in.)		
See Equipment List for Module 3	Chronic oral oncogenic studies with rodents	100	Laboratory technician	1	Variable	Variable	Variable	Variable	110	As per Module 3
See Equipment List for Module 7	Chronic inhalation oncogenic studies with rodents	410	Laboratory technician	1	Variable	Variable	Variable	Variable	110-220	As per Module 7
See Equipment List for Module 10	Chronic inhalation oncogenic studies with primates	370	Laboratory technician	1	Variable	Variable	Variable	Variable	110-220	As per Module 10
Executive Desk	Equipment for study area Director's office	0.50	Laboratory technician	NA	1	X		150 30x72x29	NA	NA
File	Equipment for study area Director's office	0.40	Laboratory technician	NA	2	X		100 15x26x60	NA	NA
Swivel Chair	Equipment for study area Director's office	0.18	Laboratory technician	NA	1	X		30 35x35x37	NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 3/13/81
Complete by GESArea Laboratory No. 16

Equipment List

Title Oncogenic Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time)	No. Required for the are/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.			
Shelves 1	Equipment for study area Director's office	0.10	Laboratory technician	NA	2		X	36x24x85	NA	N/
Side Chair 1	Equipment for study area Director's office	0.10	Laboratory technician	NA	3		X	35x35x37	NA	NA

(1) Essential
(2) Desirable
(3) Ideal(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by KFK

Area Laboratory No. 17

Title Respiratory Physiology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)		
IV Stand 1	Supply fluids	0.15	Pharmacologist, Toxicologist or Physiologist	NA	2		X	25	15x15x60	NA	NA
Stimulator 1	Evoke Physiological response	1.5	Pharmacologist, Toxicologist or Physiologist	NA	2	X		30	19x10x10	110	Grounding
Infusion pump 1	Supply fluids	0.50	Pharmacologist Toxicologist or Physiologist	NA	2	X		5	5x12x5	110	NA
Polygraph (8 channel) 1	Record physiological data	15	Pharmacologist Toxicologist or Physiologist	NA	1	X		480	36x36x60	110	Grounding index from tape
Tape recorder FM/multichannel (8 chan) with time code 1	Record physiological data	12	Pharmacologist Toxicologist or Physiologist	NA	1	X		600	24x72x36	110	Grounding
Oscilloscope digital 1	Record physiological data	6	Pharmacologist Toxicologist or Physiologist	NA	1	X		1	8x10x16	110	Grounding

- (1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81Complete by KFKArea Laboratory No. 17

Equipment List

Title Respiratory Physiology Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life > 5 yrs	Size		Voltage Requi. (V)	Special Requirements
							Wt. (lbs)	Dimen. (in.)		
Chair, restrain baboon 1	Restrain to sample semen	1.2	Caretaker	On demand	2	X	80	36x36x48	NA	Adjustable restraints to fit each animal
Chair, restrain monkey 1	Restrain to sample semen	1.0	Caretaker	On demand	2	X	80	36x36x48	NA	Adjustable restraints to fit each animal wastes collection
Physiological Recorder 1	Record from k set ups	15.0	Professional Scientist & Technician	NA	1	X	400	36x36x60	110	Grounding indexed by Tape
FM Tape record & time code 1	Record physiological data	12.0	Professional Scientist & Technician	NA	1	X	600	24x72x36	110	Grounding
Digital oscilloscope 1	Examine high speed events from k setups	6.0	Professional Scientist & Technician	NA	1	X	1	8x10x16	110	Grounding index by tape
Computer Terminal 2	Log data	5.0	Professional Scientist & Technician	NA	1	X	200	48x36x48	110	Could be time share or floppy

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by KEX

Area Laboratory No. 17

Equipment List

Title Respiratory Physiology Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Photostimulator 1	Evaluate visual neurophysiology	1.5	Professional Scientist & Technician	NA	1	X		19x10x10	110	Grounding
Audiostimulator 1	Evaluate auditory physiology	1.8	Professional Scientist & Technician	NA	1	X		19x10x10	110	Grounding
Recording Chamber 1	Evaluate CV, pulmonary	20	Professional Scientist & Technician	NA	4	X		Variable	110	Grounding
BP Transducer non-invasive 1	B.P. recording	3.5	Professional Scientist & Technician	NA	4	X		2x1x1	110	NA
Infusion pump 1	Provide fluids & sample same	0.50	Professional Scientist & Technician	NA	8	X		5x12x5	110	NA
Physiol. monitor 1	Continuous monitoring	10.0	Professional Scientist & Technician	NA	4	X		8x10x16	110	Grounding racked with control panel

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by KFK
 Area Laboratory No. 17
 Title Respiratory Physiology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the arealab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen ^(c) (in.)		
Stimulator physiol. 1	Evoke physiological response	1.5	Professional scientist & technician	NA	8	X		30	19x10x10	110	Grounding
Control panel 1	Monitor each consort and resident room	3.5	Professional scientist & technician	NA	1	X		10	19x1x10	110	Grounding special wiring on installation
Centrifuge, preparative 1	Prepare blood samples	0.80	Technician	Varies with rotar	2	X		425	31x24x55	110	NA
Balance chemical 1	Make up soln	0.80	Technician	Samples 40/hr	1	X		20	12x18x16	110	Digital recording
pH Meter 1	Make up soln	2.0	Technician	Samples 40/hr	1	X		10	14x10x10	110	Digital recording
Scale, animal 1	Animal weight determination	1.5	Caretaker	Samples 40/hr	1	X		20	6x10x13	110	Digital cap 0-20kg + transfer cage

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by KFK

Area Laboratory No. 17

Title Respiratory Physiology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the are/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. ^(c) (in.)	
Cage, transfer baboon 1	Animal transfer	1.0	Caretaker	On demand	2	X		200	60x26x72	NA
Cage, holding baboon 1	Animal housing	1.2	Caretaker	On demand	4	X		200	60x26x72	NA
Surgical table 1	Provide working surface	0.30	Professional scientist & technician	NA	1		X	200	46x24x40	NA
Surgical light 1	Provide illumination	0.30	Professional scientist & technician	NA	1		X	1	Variable	110
Respirator 1	Breathing support	0.80	Professional scientist & technician	NA	1	X		100	12x2x18	110
Anesthesia 1	Provide volatile anesthetic & supportive gases	1.5	Professional scientist & technician	NA	1	X		50	12dia x36	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81Complete by KFKArea Laboratory No. 17

Equipment List

Title Respiratory Physiology Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
BP-transducer invasive 1	BP recording	0.40	Professional scientist & technician	NA	2	X		Less than 0.25	Less than 1x1x1	NA	Grounding
BP-transducer non-invasive 1	BP recording	3.5	Professional scientist & technician	NA	2	X		2	2x1x1	110	Grounding
Cage, transfer monkey 1	Animal transfer	0.80	Caretaker	On demand	2	X		200	60x26x72	NA	Squeeze back match holding cage
Cage, holding monkey 1	Animal housing	1.0	Caretaker	On demand	4	X		200	60x26x72	NA	Squeeze back
Autoclave 1	Sterilization of equipment and feed	3.5	Technician	On demand	1	X		120	19x31x29	110	Steam
Additional Equipment 1	Miscellaneous small items to completely equip area	2.9	Technician	NA	Variable			Variable	Variable	110 or NA	NA

- (1) Essential
(2) Desirable
(3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/6/81

Complete by Jones, Jorgensen

Area Laboratory No. 18

Equipment List

Title Reproduction Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)	
Cage rack, 30 rat cages or 60 mouse cages	Hold cages	2.2	Technician	Hold 5 rats	9		X	400	72x30x72	NA
Cage, rat	House rats	0.02	Technician	Hold 5 rats	270	X		2	22x12.5x8	NA
Feeder, rat	Hold diet: pellet or meal	0.02	Technician	900 gms	270	X		1	4x5x5 4x5x7	NA
Balance, 1200 or 4400 gm cap	Weigh rodents, feeders, etc.	0.30	Technician	20 cages animals & feeder per hr.	3		X	10	8x14x7	NA
Table, utility	Hold balance, feeders, etc.	0.30	Technician	NA	3		X	80	60x30x30	NA
Safety Hood System	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	3		X	800	72x30x108	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/6/81Complete by Jones, JorgensenArea Laboratory No. 18

Equipment List

Title Reproduction Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Worktable w/sink 1	Work Area	3.5	Technician	NA	3		X	500	84x29x37	NA	NA
Balance 1	Feed Weighing	3.7 [†] 0.10	Technician	Samples 40/hr	1		X	10	8x12x4	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip lab	1.5	Technician	NA	Variable			Variable	Variable	110 or NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/13/81

Complete by GES

Area Laboratory No. 19

Equipment List

Title Teratology Studies Area

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Cage, Rack, 30 rat cages or 60 mouse cages 1	Hold cages	2.2	Technician	Hold 150 rats or 300 mice	9		X	400	72x30x72	NA	Automatic watering system
Cage, rat or 1	House rats	0.02	Technician	Hold 5 rats	270	X		2	22x12.5x8	NA	NA
Cage, mouse 1	House mice	0.01	Technician	Hold 5 mice	540	X		1	9.25x12.5x8	NA	NA
Feeder, rat or 1	Hold diet: pellet or meal	0.02	Technician	900 gms	270	X		1	4x5x5 4x4x7	NA	NA
Feeder, mouse 1	Hold diet: pellet or meal	0.01	Technician	150 gms	540	X		1 1	8x4x4 8x3x6	NA	NA
Balance, 1200 or 4400 gm cap 1	Weigh rodents, feeders, etc.	0.30	Technician	20 cages (animals & feeder per hour)	3		X	10	8x14x7	110	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
(2) Desirable
(3) Ideal

Date 3/13/81

Complete by GES

Area Laboratory No. 19

Title Teratology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						>5 yrs.	>10 yrs.	Wt. (lbs)	Dimen. ^(c) (in.)		
Table, utility	Hold balance, feeders, etc.	0.30	Technician	NA	3		X	80	60x30x30	NA	Casters
Safety Hood System	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	3		X	800	72x30x108	110	NA
Worktable w/sink	Work Area	3.5	Technician	NA	3		X	500	84x29x37	NA	NA
Balance	Feed weighing	3.7± 0.10	Technician	Samples 40/hr	1		X	10	8x12x4	110	NA
Additional Equipment	Miscellaneous small items to completely equip area	1.5	Technician	NA	Variable			Variable	Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential

(2) Desirable

(3) Ideal

Date 2/6/81Complete by Jones, JorgensonArea Laboratory No. 20Title Food Preparation/Blending Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Vee Blender 8 qt. 1	Blend diets	1.2	Technician	1 load per hr	1		X	80	30x42x48	110	NA
Vee Blender 16 qt. 1	Blend diets	2.6	Technician	1 load per hr	1		X	130	30x42x48	110	NA
Vee Blender 1 cu.ft. 1	Blend diets	4.6	Technician	1 load per hr	1		X	1000	36x60x48	220	NA
Hobart Mixer 50 kg 1	Mix diets	15	Technician	1 load per hr	1		X	1000	48x60x60	220	NA
Hobart Mixer 30 kg. cap 1	Mix diets	12	Technician	1 load per hr	1		X	1000	36x60x48	220	NA
Hobart Mixer 8 kg. 1	Mix diets	5.0	Technician	1 load per hr	1		X	150	30x24x36	110	NA

(1) Essential

(2) Desirable

(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 7/6/81Complete by Jones, JorgensonArea Laboratory No. 20

Equipment List

Title Food Preparation/Blending Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Analytical balance 1	Weigh chemicals	4.0	Technician	3 weights per hour	1		X	4 8x12x20	110	NA
Platform scale 150 kg 1	Weigh diet	5.0	Technician	30 weights per hour	1		X	600 42x42x60	NA	NA
Chemical balance 4 kg cap 1	Weigh chemicals	3.0	Technician	15 weights per hour	1		X	2 24x18x24	110	NA
Hood 1	Chemical/diet handling	7.0	Technician	NA	1		X	180 36x48x48	110	NA
Cabinet 1	Store chemicals, glassware	0.50	Technician	40 cu ft	2		X	120 18x54x72	NA	NA
Hobart mixer 1	Mix diets	2.5	Technician	2 loads per hr	1		X	5 18x12x18	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/6/81Complete by Jones, JorgensonArea Laboratory No. 20Title Food Preparation/Blending Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)	
Walk-in Freezer	Prepared diet, diet sample storage	20	Technician	882 cu ft	1		X	2000	180x120x96	Alarm
Freezer	Store chemicals, serum samples, etc.	0.90	Technician	22 cu ft	1		X	400	48x48x78	Alarm
Walk-in Refrigerator	Store commercial diet	12	Technician	756 cu ft	1		X	2000	108x144x84	Alarm

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Equipment List

Date 2/25/81
 Complete by GES & RVA
 Area Laboratory No. 21

Title Non-radioactive Waste Handling/Disposal Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in)		
Animal - bedding disposal cabinet, negative-air-flow	Incinerating bedding	3.0	Technician	32 gal.	1	X		415	29.5x51x63	110	Vacuum
Pyrolyzer	Disposal of animal waste and animal carcasses	300±100	General Staff	1500 lbs/hr. animal waste 250 lbs/hr. carcasses	1		X	Variable		460	Service for daily ash removal
Walk-in Refrigerator	Store pathology waste	12	General Staff	756 cu. ft.	2		X	2000	108x144x84	110	Alarm
Additional Equipment	Misc. small items to completely equip area	0.50	General Staff	NA	Variable			Variable		110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, w/dt: x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/25/81

Complete by GES/RVA

Area Laboratory No. 22

Title Refrigerated Food Storage

Equipment List

Equipment Item	Function	Estimated Cost (\$1000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Regmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. ^(c) (in.)		
Refrigerator, Walk-In 1	Store feed and other perishables	12	Animal Care Technician	756 cu ft	1		x	2000	108x144x84	110	Alarm for power failure or malfunction
Freezer, Walk-In 1	Store commercial diet	20	Animal Care Technician	882 cu ft	1		x	2000	180x120x96	110	Alarm
Platform Scale 150 kg 1	Weigh diets	5.0	Animal Care Technician	30 weights per hr	1		x	600	42x42x60	NA	NA
Microwave Oven 3	Thawing frozen food	0.50	Animal Care Technician	NA	1		x	90	24x30x18	110	NA
Balance 4400 gm. cap. 1	Weight rodent diets	0.30	Animal Care Technician	20 weights per hr	3		x	10	8x14x7	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	2.1	Animal Care Technician	NA	Variable			Variable	Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential

(2) Desirable

(3) Ideal

Date 2/10/81
 Complete by G. Podrebarac
 Area Laboratory No. 23

Equipment List

Title Quality Assurance Laboratory

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in)	
Infrared Spectrophotometer 1	Organic analysis	18 ⁺ 2.0	Infrared analytical chemist	25/day	1		X	150-280	Variable	110 NA
Constant Temperature Bath 1	Maintain water at constant temperature	1.0 ⁺ 0.30	Analytical chemist	Variable	1		X	60	36x16x16	110 Sink
pH Meter 1	Measurement of pH (acid-base)	1.0 ⁺ 0.20	Analytical chemist	Variable	2		X	10	14x10x10	110 Periodically purchase new electrodes
Balance, analytical (electronic) 1	Accurate gravimetric measurement of materials	6.0 ⁺ 1.0	Analytical chemist	Variable	1		X	30	18x12x10	110 NA
Balance Table 1	Special table, shock resistant for holding balance	0.70 ⁺ 0.20	Analytical chemist	NA	1		X	60	40x28x18	NA
Constant Temperature Circulating Bath 1	Maintain constant water temperature at remote location	4.0 ⁺ 0.60	Analytical chemist	Variable	1		X	15	14x12x8	110 Water and sinks

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/10/81
 Complete by G. Podrebarac
 Area Laboratory No. 23
 Title Quality Assurance Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (Throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimension (in.)		
Gas Chromatograph (electron capture FID/F-N-P)	Organic analysis	17±3.0	Analytical chemist Gas Chromatograph operator	90/day	1	X		250	30x30x30	220	Venting for exhaust gases, space for carrier & detector gases, licensing for nickle 63 radioactive detector (electron capture).
Liquid Chromatograph (analytical) (variable UV, & fluorescence detector)	Organic analysis	14±3.0	High performance liquid chromatography analytical chemist	30/day	1	X		Variable	36x36x36	110	NA
Atomic Absorption Spectrophotometer (flame, flameless & graphite furnace)	Inorganic analysis	23±3.0	Atomic absorption analytical chemist	30/day	1	X		300	40x18x20	220	Vented hood for exhaust gases
UV Visible Spectrophotometer	Specific wave length or variable wave length detection of organic material; also quantitative determination of primary organics		UV Visible analytical chemist (Any trained analytical chemist should be able to use this)	20/day	1	X		275-350	Variable	110	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/10/81Complete by G. PodrebaracArea Laboratory No. 23Title Quality Assurance Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Hood	Handling chemicals	7.0	Technician	NA	1		X	180 36x48x48	110	NA
Additional Equipment	Miscellaneous small items to completely equip area	3.9	Technician	NA	Variable			Variable	110 or NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/6/81
 Complete by S.J. Jackson
 Area Laboratory No. 24
 Title Animal Quarantine Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Autoclave 1	Sterilize equipment and feed	50	Technician	NA	1		X	2000	36x72x96	NA	Steam
Water purification and sterilization system 1	Purify drinking water to animals in automatic watering system	2.0	Technician	60 gal/hour	1		X	70	36x30x60	110	NA
Water bottle filler 2	Fill bottles with dietary supplement for primates	4.0	Technician	400 bottles/hour	1	X		300	36x30x60	NA	NA
Examination table 1	Examine large animals upon receipt & as necessary	3.0	D.V.M.	NA	1	X		50	24x60x36	NA	Tilttable
Balance, top loading 1	Weigh rodents; record weights	0.30	Animal technician	4 kg	1	X		10	8x14x7	110	NA
Primate housing units complete with feeders etc. squeeze cages 2 cages/unit 1	House primates during quarantine	2.0	Animal care technician	2 cages/unit 8 units per 10 primates 5 in use, 3 spare		X		400	30x30x80	NA	Should include automatic watering system and flush pans

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 2/6/81

Complete by S. J. Jackson

Area Laboratory No. 24

Title Animal Quarantine Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area ^(c)	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs.)	Dimen. (in.)		
Rodent racks complete with cages, feeders etc. See above for requirements 1	House rodents during quarantine	3.0	Animal care technician	2 cages/unit	5 per rm. 4 in use 1 exchange	X		500	72x30x72	NA	Automatic watering system
Dog pens; complete with feeders, watering system, etc. 1	House dogs during quarantine	1.5	Animal care technician	1 dog/pen	25		X	200	48x96x72	NA	Automatic watering system
Refrigerator 3	Store, feed and other perishables	12	Animal care technician	NA	1		X	2000	108x144x84	110	Alarm for power failure
Refrigerator 1	Hold dead animals for necropsy	8.0	Animal care technician	NA	1		X	1500	72x96x84	110	NA
Balance 1	Weigh large animals	6.0	Animal care technician	25 kg	1		X	200	36x36x60	110	NA
Worktable w/sink 1	Work area	3.5	Technician	NA	1		X	500	84x29x37	NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
(2) Desirable
(3) Ideal

Date 2/5/81

Complete by B. Kirkhart

25

Area Laboratory No.

Title Pathology Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Oven 1	Drying slides; incubation of special stains	0.30 + 0.10	Histology technician	NA	1	X		30	18x13x24	115	NA
Slide trays 1	Assembling slides for labelling, cover-slipping, reading	0.004	Pathologist	20 slides/tray	100		X	< 1	7x13x $\frac{1}{2}$	NA	NA
Microscope 1	Checking stains, quality control	2.5 + 0.50	Histology technician	Variable	1		X	5	8x8x20	115	NA
Refrigerator/freezer 1	Chilling blocks, freezing trays, storage of reagents	1.0 + 0.20	Histology technician	15 cu. ft.	1		X	250	30x35x60	115	NA
Paraffin dispenser 1	Melting stock paraffin for use in processor and embedding center	0.50 + 0.10	Histology technician	10 lbs. paraffin per day	1	X		3	8x8x14	115	NA
Microtome knives 1	Sectioning	0.10 + .02	Histology technician	Variable	6	X		< 1	12x12x12	NA	Require sharpening after each use

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/5/81

Complete by B. Kirkhart

Area Laboratory No. 25

Title Pathology Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000)/a	Operator Title	Capacity of Equipment (Throughput per unit of time)/b	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Portable fume hood (option: built-in sit-down hoods) 1	Remove formaline and solvent fumes from air during cut-in and covers sipping	1.2 + 0.60	Histology technician	NA	2	X		5	27x14x12	115	Filter required
Cassette lids 1	Covering cassettes during processing	0.20 + 0.10	Histology technician	NA	500		X	< 1	12x12x12	NA	NA
Tissue processor 2	Automatic dehydration, clearing and infiltration of tissues	15 + 10	Histology technician	300 blocks/hr	1	X		500	27x27x30	115	Some less expensive models must be in fume hood; other units are free-standing
Embedding center 1	Embedding processed tissues in paraffin	3.5 + 2.0	Histology technician	60 blocks/hr	1	X		90	36x24x15	115	Some models require running water hood-up
Base molds 1	Casting paraffin blocks	0.30 + 0.10	Histology technician	1 block/mold; reusable	120		X	< 1	42x12x12	NA	NA
Microtome 1	Sectioning blocks	6.0 + 4.0	Histology technician	50 blocks/hr	2		X	100	9x14x9	NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/5/81

Complete by B. Kirkhart

Area Laboratory No. 25

Title Pathology Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						>5 yrs.	>10 yrs.	Wt. (lbs.)	Dimen. (in.)		
Balance 1	Weighing reagents	2.5 + 2.0 -	Histology technician	Variable	1	X		25	7x13x4	115	NA
pH Meter 1	Compounding stains and buffers, quality	0.45 + 0.10 -	Histology technician	Variable	1	X		10	11x6x8	115	Electrodes must be replaced periodically
Cryostat 2	Cutting frozen sections for special procedures	6.0 + 1.0 -	Histology technician	50 blocks/hr	1		X	300	27x25x48	115	NA
Microscope 1	Diagnosing slides	22 + 17 -	Pathologist	10 slides/hr	1		X	5	8x8x20	115	NA
Knife sharpener 1	Sharpening microtome knives	4.0 + 2.0 -	Histology technician	2 knife/hr	2	X		15	30x20x17	110	Periodically must purchase honing compounds and new plates
Automatic stainer 3	H & E Staining	6.5 + 2.0 -	Histology technician	80 slides/hr un-attended	1	X		75-400	40x20x12	110	Running water hook-up

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
(2) Desirable
(3) Ideal

Date 2/5/81Complete by B. KirkhartArea Laboratory No. 25Title Pathology Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Photomicroscopy apparatus ²	Photographing microscopic observations	0.50 + 0.10	Pathologist	Variable	1		X	5	Variable	115	NA
Slide storage cabinet ¹	Storing completed slides	0.50 + 0.40	Pathologist	5,000 slides	1		X	10	16x29x5	NA	NA
Electron microscope ¹	Histopathology	100	Electron microscope operator	NA	1		X	1500	90x45x110	220	NA
Hood ¹	Handling chemicals	7.5	Laboratory technician	NA	2		X	180	36x48x48	110	NA
Additional equipment ¹	Misc. small items to completely equip area	1.0 + 0.5	Staff	NA	Variable			Variable	Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Equipment List

Date 2/6/81
 Complete by Ionna Elwood
 Area Laboratory No. 26
 Title Clinical Chemistry Laboratory

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Turner Model 350 spectrophotometer UV & Visible 1	Specific wavelength Colorimetry	1.0 [±] 0.25	Assistant Med Tech & Junior Biologist	30/hr	1	X		23	13x15x8	110	NA
Fibrometer 1	Determination of properties of plasma or serum for diagnostic purposes	1.0 [±] 0.25	Assistant Med Tech & Junior Biologist	40/hr	1		X	7	11x7x4	110	NA
Balplan Microscope (2 ea) 1	Phase Contrast used for particle counting retics WBC, platelets, ova & parasites	2.5 [±] 0.60	Assistant Med Tech & Junior Biologist	20/hr	2		X	35	7x16x15	110	NA
Coulter ZBI 1	Used for routine & research applications in counting & sizing of blood cells, platelets	7.0 [±] 1.8	Assistant Med Tech & Junior Biologist	10/hr	1	X		200	14x17x18	110	NA
Hemoglobinometer 2	Direct digital readout of cyanmethemoglobin in grams per 100 ml	1.7 [±] 0.42	Assistant Med Tech & Junior Biologist	30/hr	1	X		20	6x22x11	110	NA
IEC Centrifuge 1	Centrifuge Hematocrit tubes at 11,500 rpm	0.50 [±] 0.12	Assistant Med Tech & Junior Biologist	72/hr	1		X	15	9x12x9	115	NA

- (1) Essential
 (2) Desirable
 (3) Ideal
- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/6/81Complete by Lonni ElwoodArea Laboratory No. 26Title Clinical Chemistry Laboratory Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	>10 yrs	Wt. (lbs)	Dimen. ^(c) (in.)		
Centrifichem Centrifugal Analyzer, pipettor & computer ²	Automated Chemistry analyzer for clinical chemistries	75 $\pm$ 10	Assistant Med Tech & Junior Biologist	70/hr	1		X		60x24x36	115	Two lines (30 & 15 amps)
Nova I ²	Uses a mini computer plus ion specific electrodes to analyze for sodium and potassium	6.7 $\pm$ 1.7	Assistant Med Tech & Junior Biologist	30/hr	1		X	150	16x21x23	115/230	NA
Gilford 3400 system plus electrophoresis integrator and recorder ¹	Semi automated clinical chemistry analyzer. Does spectrophotometric end-points & kinetic reactions	30 $\pm$ 7.5	Assistant Med Tech & Junior Biologist	30/hr	1		X	150	36x24x24	115	NA
Gelman Electrophoresis deluxe regulated power supply + applicator & chamber ¹	Used to separate protein bands by causing migration through use of electrical charge	0.85 $\pm$ 0.20	Assistant Med Tech & Junior Biologist	14/hr	1		X	6	15x11x9	110/220	NA
Hematek Slide Stainer ²	Staining slides for differentials	3.5 $\pm$ 1.0	Assistant Med Tech & Junior Biologist	60/hr	1		X	50	19x15x8	115	NA
Corning Chloride-meter ¹	Uses a coulometric reference technique to accurately & rapidly determine chloride in serum, plasma	1.4 $\pm$ 0.35	Assistant Med Tech & Junior Biologist	100/hr	1	X		15	9x6x13	115	NA

- (1) Essential
(2) Desirable
(3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/6/81
 Complete by Lonni Elwood
 Area Laboratory No. 26
 Title Clinical Chemistry Laboratory Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen't (in.)	
Dade Dillitor 1	Makes 1/500 & 1/100 dilutions for cell counts	0.50 [†] 0.12	Assistant Med Tech & Junior Biologist	60/hr	1	X		13	7x10x9	110 NA
International Centrifuge (Model K) 1	Spin down biological specimens	2.8 [†] 0.70	Assistant Med Tech & Junior Biologist	Varies with rotar	1		X	425	31x24x55	115 NA
Hood 1	Handling chemicals	7.0	Technician	NA	2		X	180	36x48x48	110 NA
Additional Equipment 1	Miscellaneous small items to completely equip area	4.8	Technician	NA	Variable			Variable	110 or NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/12/81

Complete by KEK

Area Laboratory No. 27

Title Animal Breeding Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqm. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Microscopes 1	Count & evaluate semen, evaluate vaginal smears	3.5	Technician	NA	4	X		5	8x8x20	110	NA
Stimulators, physiological 1	Used to induce ejaculation	1.5	Prof. staff technician	NA	4	X		30	19x10x10	110	Grounding
Chair, restraining baboon 1	Restraint to sample semen	1.2	Caretaker	On demand	2	X		80	36x36x48	NA	Adjustable restraints to fit each animal
Chair, restraining monkey 1	Restraint to sample semen	1.0	Caretaker	On demand	2	X		80	36x36x48	NA	Adjustable restraints to fit each animal
Cages, transfer baboon 1	Transfer female to male	1.0	Caretaker	On demand	2	X		200	60x26x72	NA	Squeeze back match resident cage
Cages, transfer monkey 1	Transfer female to male	0.80	Caretaker	On demand	2	X		200	60x26x72	NA	Squeeze back match resident cage

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/12/81

Complete by KFK/GES

Area Laboratory No. 27

Title Animal Breeding Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the arealab	Expected Life		Size		Voltage Reqm. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Cages, baboon resident 1	4 used as consort/ breeding 16 housing females	1.2	Caretaker	1/6 mos	20	X		200	60x26x72	NA	Squeeze back
Cages, monkey resident 1	4 used as consort/ breeding 16 housing females	0.80	Caretaker	1/6 mos	20	X		200	60x26x72	NA	Squeeze back
Control panel 1	Monitor each consort & resident room	2.0	Technician or Professional staff	Continu-ous	4	X		10	19x1x10	110	Special wiring at installation
Balance, chemical 1	Prepare drugs, etc.	6.5	Technician	On demand	1	X		20	12x18x16	110	Digital output for recording
Cage Rack, 30 rat cages or 60 mouse cages 1	Hold cages	2.2	Technician	Hold 2 150 rats or 300 mice	8		X	400	72x30x72	NA	Automatic watering system
Cage, rat 1	House rats	0.02	Technician	Hold 2 5 rats	240	X		2	22x12.5x8	NA	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Deal

Date 2/12/81

Complete by KFK/GES

Area Laboratory No. 27

Title Animal Breeding Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (Throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Cage, mouse 1	House mice	0.01	Technician	Hold 2 mice	480	X		1	9.25x12.5x8	NA	NA
Feeder, rat 1	Hold diet: pellet or meal	0.02	Technician	900 gms	240	X		1	4x5x5 4x4x7	NA	NA
Feeder, mouse 1	Hold diet: pellet or meal	0.01	Technician	150 gms	80	X		1 1	3x4x4 3x3x6	NA	NA
Balance, 1200 or 4400 gm cap 1	Weigh rodents, feeders, etc.	0.30	Technician	20 cages (animals & feeder per hour)	4		X	10	8x14x7	110	NA
Centrifuge preparatory 1	Treat blood samples	0.80	Technician	On demand	2	X		425	31x24x55	110	NA
Scale, animal 1	Monitor animal weight	1.5	Caretaker	40 kg	2	X		20	6x10x13	110	Digital output for recording

(1) Essential

(2) Desirable

(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by KFK
 Area Laboratory No. 27
 Title Animal Breeding Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Worktable w/sink 1	Work Area	3.5	Technician	NA	2		X	500 84x29x37	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	2.5	Technician	NA	Variable			Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81

Complete by KFK

Area Laboratory No. 28

Title Veterinary Medicine Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the arealab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt (lbs)	Dimen (in.)		
Examining Table 1	Provide examining surface with restraints	0.30	DVM, Pharmacologist or Assistants	2/day	2		X	50	46x24x40	NA	NA
Respirator 1	Provide vital support when needed	0.80	DVM, Pharmacologist or Assistant	2/day	2	X		100	12x 2x18	110	Endotracheal tube needed
Anesthesia and gas machine 1	Provide gas therapy or anesthesia	1.5	DVM, Pharmacologist or Assistants	2/day	2	X		50	12 dia x 36	NA	Pediatric masks & bags
Intravenous stands 1	Provide support for fluids when needed	0.15	DVM, Pharmacologist or Assistants	2/day	4		X	25	15x15x60	NA	NA
TV Monitor & recorder 2	Record proceedings	2.5	DVM, Pharmacologist or Assistants	2/day	2	X		50	6x10x6	110	Camera (ceiling mounted), recorder & monitor at control panel
Tape recorder voice recording 1	Record treatment notes	0.20	DVM, Pharmacologist or Assistants	2/day	2	X		600	24x72x36	110	Foot activated

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

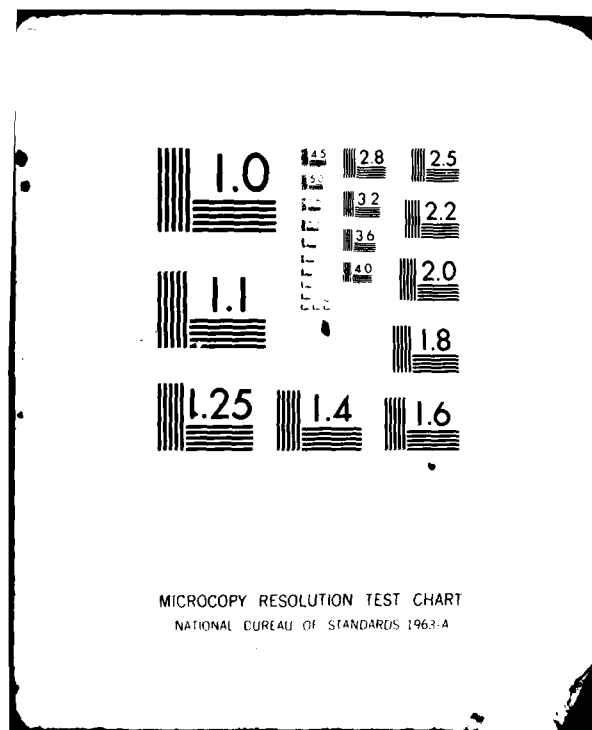
(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

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Date 2/12/81Complete by KFKArea Laboratory No. 28Title Veterinary Medicine Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)		
Control monitor panel 1	Coordinate activity in 2 treatment rooms	3.5	Technician Electronic training	On demand	1	X		10	19x1x10	110	Special wiring on installations
Animal scale 1	Animal weight determination	1.5	Caretaker, Technician General	On demand	1	X		20	6x10x13	110	Digital output to terminal 0-20KG + transfer cage
Autoclave 1	Sterilization	3.5	Technician General	On demand	1	X		120	19x31x29	110	Steam
Cages, transfer baboon 1	Animal transfer	1.0	Caretaker	On demand	2	X		200	60x26x72	NA	Matching to resident cage squeeze back
Cages, transfer monkey 1	Animal transfer	0.80	Caretaker	On demand	2	X		200	60x26x72	NA	Matching to resident cage, squeeze back
Cages, recovery baboon 1	Provide recovery space for animal	1.2	Caretaker	On demand	4	X		200	60x26x72	NA	Matching to transfer, equipped to sample feces & urine. Ceiling hung squeeze back

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/12/81
 Complete by KFK
 Area Laboratory No. 28
 Title Veterinary Medicine Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Cautery 1	Hemostasis & wound repair	0.80	Professional scientist & Technician	2/day	2	X		15 8x10x4	110	Grounding
Physiol. monitor 1	Monitor vital functions	10	Professional scientist & Technician	2/day	2	X		5 8x10x16	110	Grounding Non-invasive transd. monitor ceiling mtd. switch through control to recorder
Physiological recorder 1	Record selected events/shared between 2 rooms	15	Professional scientist & Technician	2/day	1	X		400 36x36x60	110	8 Channels FM tape compatible controlled through panel
Locking cabinet 1	Drug & fluid storage	0.30	Caretaker	NA	2	X		150 16x19x5	NA	NA
Racks & trays 1	For instrument storage	0.15	Caretaker	2/day	4	X		Variable	NA	NA
Computer terminal 2	Log data, I/O information shared between treatment rooms	5.0	Professional scientist & Technician	On demand	1	X		200 48x36x48	110	Could be on time share or floppy disk

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/12/81
 Complete by KFK
 Area Laboratory No. 28
 Title Veterinary Medicine Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)	
Cages, recovery monkey	Provide recovery space for animal	1.0	Caretaker	On demand	4	X		200	60x26x72	NA
TV monitor & recorders	Monitor each recovery cage	2.0	Technician or Caretaker	On demand	8	X		50	6x10x6	Cameras mounted to monitor recovery in control monitor panel
Computer terminal	Log data	5.0	Technician	On demand	1	X		200	48x36x48	Could be part of time share or floppy
Control monitor panel	Remote monitoring of recovering animals	2.0	Technician with Electronic training	On demand	1	X		10	19x1x10	Special wiring on installation
Additional Equipment	Miscellaneous small items to completely eq. area	3.1	Technician	NA	Variable			Variable	110 or NA	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 1/23/81
 Complete by D. Takade
 Area Laboratory No. 29

Title Chemistry Laboratory (Analytical & Synthetic)

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen ^(c) (in.)		
Gas Chromatograph (electron capture FID/F-N-P) 1	Organic Analysis	11±4.0	Analytical Chemist/With Gas Chromatograph Operator	With analyzer attach... approx 90 samples/day	2	X		250	30x30x30	220	Venting for exhaust gases, space for carrier & detector gases, licensing for nickel 63 radioactive detector (electronic capture)
Liquid Chromatograph (analytical) (Variable UV, and fluorescence detector) 1	Organic Analysis	14±4.0	High performance Liquid Chromatography Analytical Chemist	Variable up to 20 samples/day	2	X		300	36x36x36 (total)	110	NA
Atomic Absorption Spectrophotometer (flame, flameless and graphite furnace) 1	Inorganic Analysis	20±5.0	Atomic Absorption Analytical Chemist	Approx. 10 to 30/day	1	X		300	40x18x20	220	Vented hood for exhaust gases
UV Visible Spectrophotometer 1	Specific wavelength or variable wavelength detection of organic material, also quantitative determination of primary organics	18±4.0	UV Visible Analytical Chemist (any trained Analytical Chemist should be able to use this equipment)	Dependent on type of analysis approx. 2h/day	1	X		300	12x24x18	110	NA
Infrared Spectrophotometer 1	Organic analysis	20±5.0	Infrared Analytical Chemist	10 to 25 samples/day	1		X	250	12x24x18	110	NA
Gas Permeation Chromatograph 1	Separation of organic matter from interfering with trace materials	2.0±0.50	GPC Analytical Chemist (any Analyt. Chemist should be able to operate this piece of equipment)	150 samples/day	1	X		40	72x36x36	110	NA

- (1) Essential
 (2) Desirable
 (3) Ideal
- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Equipment List

Date 1/23/81
 Complete by D. Takade
 Area Laboratory No. 29
 Title Analytical/Synthetic Chemistry Laboratory

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Rotary Evaporator 1	Reduction of solvent volume prior to sample analysis	0.80 ⁺ 0.40	Analytical Chemist	4 samples/hour	4	X		35	24x27x25	110	Dry Ice Acetone Bath (condenser) Water Bath
Kuderna-Danish Micro-Evaporators 1	Evaporation of residual solvent	1.0	Analytical Chemist	Variable	20	X		0.25	Variable	NA	Warming bath and condensers
Sample Extraction Glassware (Soxhlet Extractors and Condensers) 1	Extracts sample from organic matrix	0.50 ⁺ 0.25	Analytical Chemist	Variable one sample/unit	6	X		0.25	Variable	NA	Heating mantle or steam bath and condenser
Miscellaneous Glassware Separatory funnels of various sizes, collectors and reservoirs 1	Sep. of organic material from water soluble material	0.50 ⁺ 0.25	Analytical Chemist	One per sample, approx. one per hour	25	X		0.25	Variable	NA	NA
Beakers, Graduated Cylinders, Flasks Condensers (Snyder) 1	The function is general support laboratory work	Variable	Analytical Chemist	One sample/unit	Variable	X		0.25	Variable	NA	NA
Liquid Chromatograph (Preparative) 1	Milligram quantity separation of materials prior to analytical work	11 ⁺ 4.0	Liquid Chromatograph Analytical Chemist	Variable approx. one sample/hour	1	X		250	40x18x12	110	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 1/23/81
 Complete by D. Takade
 Area Laboratory No. 29
 Title Analytical/Synthetic Chemistry Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Drying Oven 1	Drying glassware	1.0 [±] 0.50	Analytical Chemist	Limited by size of glassware and oven size	1		X	70-90	28x24x24	110	NA
Centrifuge (floor type, high speed) 1	Separation of phases	4.0 [±] 2.0	Analytical Chemist	Variable up to 12 samples/run	1		X	425	40x36x36	220	NA
Constant temperature bath 1	Maintain constant water temperature	1.0 [±] 0.50	Analytical Chemist	Variable	1		X	60	36x16x16	110	Sink and water supply
Constant temperature circulating bath 2	Maintain constant water temperature at remote locations	4.0 [±] 1.0	Analytical Chemist	Variable	1		X	22	14x12x8	110	Sink and water supply
Refrigerator/Freezer 1	Cold storage	1.0 [±] 0.50	Analytical Chemist	20 cubic feet	2	X		250	72x36x36	110	Explosion proof
Hood 1	Handling chemicals	7.0	Analytical Chemist	Variable	2		X	180	36x48x48	110	NA

- (1) Essential
 (2) Desirable
 (3) Ideal
- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 1/23/81

Complete by D. Takade

Area Laboratory No. 29

Title Analytical/Synthetic Chemistry Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^a	Operator Title	Capacity of Equipment (throughput per unit of time) ^b	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Muffle Furnace 1	High temp. glassware cleaning	2.5 ± 1.0	Analytical Chemist	Limited by size of glassware dimensions of oven	1		X	40x30x30	220	NA
pH meter 1	Measurement of pH (acid-base)	0.90 ± 0.50	Analytical Chemist	Variable 4 samples/hour	2		X	14x10x10	110	Periodically purchase new electrodes
Balance, top loader 1	Approx. gravimetric measurements	2.5 ± 1.0	Analytical Chemist	Variable 4 samples/hour	1		X	16x12x10	110	NA
Balance, analytical (electronic) 1	Accurate gravimetric measurement	6.5 ± 1.5	Analytical Chemist	Variable 4 samples/hour	1		X	18x12x10	110	NA
Balance table 1	Special table, shock resistant for holding	0.70 ± 0.30	Analytical Chemist	NA	1		X	40x28x18	NA	NA
Automatic titrator 2	Automatic titration of acids and bases	14 ± 2.0	Analytical Chemist	Variable 2/hour	1		X	14x12x10	110	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 1/23/81
Complete by D. Takade
Area Laboratory No. 29

Equipment List

Title Analytical/Synthetic Chemistry Laboratory[illegible]

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 3/6/81
 Complete by Jim Powell
 Area Laboratory No. 30
 Title Automated Data Processing Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (Throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs.)	Dimen. (in.)		
DEC PDP11/34A w/128k mem. printer/plotter dual cart.disk drives MAS tape dual floppy disk display terminal 1	Host computer, collects and analyses data from individual lab computers (satellites)	100	Programmer	Variable	1	x		250	25x25x70	120 vac 220 vac	60°F<T<75°F
DEC PDP134A w/164k MEM. Disk drive display terminal 2	Satellite computer, collects data for individual lab areas	40	Scientist	NA	20	x		50	25x25x25	120 vac	60°F<T<75°F
Host Computer Software 1	Real-time multi-tasking operating system, Fortran, Basic, Print/Plot routines	10	Programmer	NA	1		x	NA	NA	NA	NA
Satellite Computer Software 2	Real-time operating system, Fortran, communication programs	5.0	Programmer	NA	5		x	NA	NA	NA	NA
IBM System/34 w/128k MEM 128 MB disk 3 display stations 1 line printer 1	Perform business functions, project tracking, scheduling inventory, etc.	110	Programmer/operator	Variable	1	x		200	25x25x50	120 vac 220 vac	75°F<T<60°F

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 3/6/81
 Complete by Jim Powell
 Area Laboratory No. 30
 Title Automated Data Processing Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqm. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)	
IBM Business Software 1	Programs to perform standard bus. functions	15	Programmer	NA	1	X		NA	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.5	Programmer	NA	Variable			Variable	110 or NA	NA

- (1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/6/81Complete by C. MitomaArea Laboratory No. 31Title Radiochemistry Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (Throughput per unit of time)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)		
Radioactivity Monitor for HPLC 1	Locates radioactive peaks among eluates from HPLC	12	Biochemist	20/day	1		X	150	10x16x22	110	NA
Rotary Evaporator 1	Dry down large volumes of organic extracts	1.0	Biochemist	10/day	1-2		X	20	12x12x12	110	Vacuum pumps
Vortex Evaporator 1	Dry down small volumes of organic extracts	1.0	Biochemist	50/day	1		X	50	16x16x12	110	Vacuum pumps
Refrigerator/Freezers 1	Preserve biological samples	1.0	Biochemist	NA	2-3		X	250	30x45x65	110	NA
Top-loading Balance 1	Weigh out chemicals and tissues	0.50	Biochemist	200/day	1-2		X	20	10x10x15	110	NA
Analytical Balance 1	Weigh out small amounts of standard chemicals	3.0	Biochemist	100/day	1		X	40	10x18x18	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/6/81

Complete by C. Micoma

Area Laboratory No. 31

Title Radiochemistry Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Liquid Scintillation Counters 1	Assay radioactivity	20	Biochemist	150/day	2		X	500	35x46x60	110	None. Radioactivity license required for the specific isotope to be used
Sample/Oxidizer 1	Oxidize tissues for radioactivity assay	14	Biochemist	100/day	1	X		150	20x36x40	110	Vent to hood
Polytron Homogenizer 1	Homogenize tissue for radioactivity assay	4.0	Biochemist	200/day	1	X		20	10x10x20	110	NA
High-pressure liquid chromatography apparatus (HPLC) 1	Separation and purification of compounds	40	Biochemist	20/day	1-2	X		250	24x24x32	110	NA
Refrigerated Centrifuge 1	Preparation of organic extract of tissues	7.0	Biochemist	100/day	1-2		X	200	30x30x36	220	NA
Reciprocal Shaker 1	Extraction of compound by shaking tissues with solvents	4.0	Biochemist	200/day	1		X	200	20x20x30	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/6/81
 Complete by C. Mitona
 Area Laboratory No. 31
 Title Radiochemistry Laboratory

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requir. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)		
Safety Hood System 1	Handling radioactive material	7.5	Technician	NA	2		X	800	72x30x108	110
Additional Equipment 1	Miscellaneous small items to completely equip area	4.2	Technician	NA	Variable			Variable	110 or NA	NA

- (1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/6/81
 Complete by E. Williams
 Area Laboratory No. 32
 Title Cage/Rack Washing & Storage Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)		
Storage Building 3	To house unused equipment for animals	30	Staff	NA	1		X	Var.	312x312x96	NA	Needs to be close to animal quarters
Wash Racks 1	To wash excreta pans	0.90	Animal Technician	NA	2		X	100	65x39x24	NA	NA
Cage Washing Racks 1	To wash polycarbonate cages	0.90	Animal Technician	NA	2		X	100	62x29x69	NA	NA
Animal bedding disposal cabinet 2	Incinerating bedding	3	Staff	NA	1	X		150	30x51x63	110	Vacuum
Tunnel type cage washer and dryer 1	Wash individual cages, feeders, etc.	75	Staff	NA	1		X	1500	30x60x72	205	100 psi steam or gas fired heater
Additional Equipment 1	Miscellaneous small items to completely equip area	1.0	Staff	NA	Variable			Variable		110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/10/81
 Complete by S. Graves
 Area Laboratory No. 33
 Title Chemical Storage Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Refrigerators 1	Subambient bulk chemical storage	3.2	Chemist	NA	2		X	1500	84x33x83	110/220	NA
Freezers 1	Subambient bulk chemical storage	4.0	Chemist	NA	2		X	1500	84x33x83	110/220	NA
Flammable solvent storage cabinet 1	Storage of flammable material	0.70	Chemist	NA	1		X	385	43x18x65	NA	Vent to outside area
Additional Equipment 1	Miscellaneous small items to completely equip area	1.0	Chemist	NA	Variable			Variable	Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/13/81

Complete by Karl L. Linaburg

Area Laboratory No. 34

Title Showers, Lockers and Toilets Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life > 5 yrs	Size		Voltage Requi. (V)	Special Requirements
							Wt. (lbs)	Dimen. (in.)		
Shower Stall 1	Cleanup	0.25 [±] 0.10	General Staff	NA	20	X	100	36x36x96	NA	Water lines (Hot & Cold) Drainage, Drying Area
Toilets 1	Defecation	0.13 [±] 0.10	General Staff	NA	10	X	75	20x30x26	NA	Sewer drain, water line
Sink & cabinet 1	Cleanup	0.15 [±] 0.10	General Staff	NA	10	X	500	20x140(5)	NA	Water & drainage
Mirror 2	Cleanup	0.08	General Staff	NA	2	X	68	36x72	NA	NA
Lockers 1	Change of clothes	0.10 [±] 0.05	General Staff	NA	20	X	50	12x18x60	NA	NA
Locker Room Bench 1	Seating	0.11 [±] 0.05	General Staff	NA	4	X	50	70x10x18	NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Equipment List

Date 2/13/81Complete by Earl L. LinaburgArea Laboratory No. 34Title Showers, Lockers and Toilets Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. ^(c) (in.)	
Laundry Basket 1	Collect soiled laundry	0.07 ¹ 0.05	General Staff	NA	4		X	75	30 dia x 36	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/6/81Complete by Reid FlippinArea Laboratory No. 15Title Glassware Washing Area

Equipment List

Equipment Item	Function	Operator Title	Capacity of Equipment (throughput per unit of time) ^(a)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
					> 5 yrs	> 10 yrs			
Heinicke Instruments Co. Electric Dishwasher Model HN-2 1	Wash glassware and related laboratory equipment	Laboratory technician	2 wash racks 2 loads/hour	1		X	44x38x20.5	230	Must be connected to deionized or distilled H ₂ O
Heinicke Instruments Co. Drying Oven Model 1	Dry glassware	Laboratory technician	1 load/hour	1		X	31x40x64	230	Connect to drain
Barnstead Nano-pure Water System 1	Provide deionized H ₂ O	Laboratory technician	Approx. 2 gal/hour	1		X	40x36x12+30x24x8	115	Connect to tap H ₂ O
Castle Electric Autoclave 1	Sterilize culture media, spent cultures, solutions & glassware	Senior Staff to Technicians	1 load/hour	1		X	52x30x72	230	Connect to drain
American Sterilizer Autoclave Gas Boiler 1	Sterilize culture media, spent cultures, solutions & glassware	Senior Staff to Technicians	1 load/hour	2		X	40x22x65	115	Connect to drain
Additional Equipment 1	Miscellaneous small items to completely equip area	Senior Staff to Technicians	NA	Variable			Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 2/13/81
 Complete by Earl L. Linaburg
 Area Laboratory No. 36
 Title Library Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)		
Bookcases 1	Hold library volumes	0.30 [†] 0.10	Librarian	NA	6		X	133	36x12x82	NA	NA
Magazine Rack 1	Hold magazines	0.45 [†] 0.05	Librarian	NA	1		X	130	36x12x82	NA	NA
Catalog Card File 1	Card catalog	0.30 [†] 0.05	Librarian	NA	1		X	100	35x18x26	NA	NA
Work Table 1	Reading, note taking	0.13 [†] 0.03	General Staff	NA	1		X	80	30x72x29	NA	NA
Side Chairs 1	For work table	0.03	General Staff	NA	8		X	10	35x35x37	NA	NA
Desk w/typing pedestal 1	Keeping files	0.28	Librarian	NA	1		X	200	30x60 w/ 20x37 type pedestal	NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/13/81Complete by Earl L. LinaburgArea Laboratory No. 36Title Library Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^a	Operator Title	Capacity of Equipment (Throughput per unit of time) ^b	No. Required for the area ^b	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Posture Chair 1	Typist working chair	0.09	Librarian	NA	1		X	31	35x35x37	NA	NA
IBM Typewriter 1	Typing	1.0 $\pm$ 0.30	Librarian	NA	1		X	60	20x15x10	110	NA
File Cabinet 1	Document filing	0.20 $\pm$ 0.10	Librarian	NA	1		X	160	15x26x60	NA	NA
Step Stool 1	Reach higher shelves	0.05	Librarian	NA	1		X	10	20 dia x 24	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.0	Librarian	NA	Variable			Variable		110 or NA	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Equipment List

Assume 2 Executive offices and 3 secretaries

Date 2/13/81

Complete by Earl L. Linaburg

Area Laboratory No. 37

Title Technical Offices Area

Equipment Item	Function	Estimated Cost (\$000) ^a	Operator Title	Capacity of Equipment (Throughput per unit of time) ^b	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Executive Desk 1	Work Area	0.50 [±] 0.10	Executive	NA	2		X	150	30x72x29	NA	NA
Swivel chair 2	Work area	0.18 [±] 0.05	Executive	NA	2		X	30	35x35x37	NA	NA
Side chair 1	Visitor seating	0.10 [±] 0.05	Visitor	NA	6		X	20	35x35x37	NA	NA
Credenza 1	Filing	0.40 [±] 0.10	Executive	NA	2		X	75	20x60x29	NA	NA
Secretarial Desk 1	Secretary	0.28	Secretary	NA	3		X	150	30x60 w/ 20x37 typing ped.	NA	NA
Posture Chair 1	Secretary	0.13	Secretary	NA	3		X	30	35x35x37	NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/13/81
 Complete by Earl L. Linaburg
 Area Laboratory No. 37

Equipment List

Title Technical Offices Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
File Cabinets 1	Filing	0.20± 0.05	Secretary	NA	3		X	160	26x15x60	NA	NA
Typewriters 1	Typing	1.0	Secretary	NA	3		X	60	20x15x10	NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/13/81

Complete by Earl L. Lindburg

Area Laboratory No. 38

Title Shipping & Receiving Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Work Table metal 1	Receiving (1) Receiving (2)	0.15	Clerk	NA	2		X	72x36x34	NA	NA
File 1	P.O. Storage	0.20± 0.05	Clerk	NA	1		X	26x15x60	NA	NA
Cabinet 1	Supply storage	0.15± 0.05	Clerk	NA	2		X	36x18x36	NA	NA
Trash Container 1	Used packing trash	0.04± 0.01	Clerk	NA	2		X	30 dia x 36	NA	NA
Tape Machine 1	Shipping	0.18± 0.02	Clerk	NA	2		X	16x5x8	NA	NA
Pallet Cart-hand 1	Receiving	0.50± 0.20	Clerk	NA	1		X	50x21	NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
(2) Desirable
(3) Ideal

Date 2/13/81
 Complete by E. Linaburg
 Area Laboratory No. 38
 Title Shipping & Receiving Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/tab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Pallet Cart-electric 2	Receiving	1.8± 0.50	Clerk	NA	1		X	33x26x92	110	NA
Seal 1	Shipping weight	0.40± 0.10	Clerk	NA	1		X	19x28x43	NA	NA
Deck Board 1	Receiving	0.50± 0.02	Clerk	NA	1		X	36x4x54	NA	NA
Bonding Machine 1	Shipping	0.20± 0.03	Clerk	NA	1		X	Variable	NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/13/81

Complete by E. Linaburg

Area Laboratory No. 39

Equipment List

Assume room size 15' x 20'

Title Luncheon Room Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Tables 1	Eating	0.10 [±] 0.05	General Staff	NA	6		X	30	36x36x29	NA	NA
Chairs 1	Seating	0.05 [±] 0.02	General Staff	NA	25		X	10	16x16x40	NA	NA
Refrigerator 2	Storage of food, drinks	0.40 [±] 0.20	General Staff	NA	1		X	300	29x31x65	115	NA
Microwave Oven 3	Food warmer	0.50 [±] 0.20	General Staff	NA	1		X	87	24x20x15	115	NA
Trash Can 1	Trash	0.05	General Staff	NA	1		X	15	24 dia x 18	NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/10/81
 Complete by E. Podrebarac
 Area Laboratory No. 40

Equipment List

Title Record Archives Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/tab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Microfiche System 2	Filming, duplication, retrieving, and reading records	22	Librarian	NA	1		X	1000 60x36x60	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.6	Librarian	NA	Variable			Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/6/81Complete by F. I. MetzArea Laboratory No. 41Title Specimen Storage Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Slide Cabinet 6 drawers/ cabinet 1	Store slides (3"x1 glass slides)	0.07	Lab Assistant	4,500 slides/ drawer	Number of animals will de- termine		X	150 16x19x5	NA	Storage space and strong floor space
Base for slide cabinets 1	Support	0.04	Lab Assistant	NA	1 for each drawer		X	60 16x19x1	NA	Storage space
Embedding cassette To store & file storage cabinets finished blocks 6 drawers/unit 1		0.11	Lab Assistant	1,000 blocks/ drawer	Number of animals will de- termine		X	150 16x19x5	NA	Storage space
Jar & Lids 1	Specimen storage	0.04/ gross	Histotech Pathology Assistants	4 oz.	Number of animals will de- termine		X	0.25 Variable	NA	Sufficient storage space
Jars & Lids 1	Specimen storage	0.05/ gross	Histotech Pathology Assistants	9 oz.	Number of animals will de- termine		X	0.25 Variable	NA	Sufficient storage space
Jars & Lids 1	Specimen storage	0.06/ gross	Histotech Pathology Assistants	16 oz.	Number of animals will de- termine		X	0.25 Variable	NA	Sufficient storage space

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/6/81
 Complete by F. I. Metz
 Area Laboratory No. 41

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life	Size		Voltage Requi. (V)	Special Requirements
							Wt. (lbs)	Dimen. (in.)		
Jars & Lids 1	Specimen storage	0.08/ gross	Histotech Pathology Assistants	32 oz.	Number of animals will determine	X	0.25	Variable	NA	Sufficient storage space
Additional Equipment 1	Miscellaneous small items to completely equip area	2.4	Histotech Pathology Assistants	NA	Variable		Variable	Variable	110 or NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/13/81
 Complete by Earl L. Linaburg
 Area Laboratory No. 42

Equipment List

Assume approx. room size 20' x 20'

Title Linen Storage Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the arealab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Shelving 1	Linen storage	0.10 [±] 0.05	Custodian	NA	10		X	50	36x24x85	NA	NA
Table 1	Sorting & folding	0.13 [±] 0.05	Custodian	NA	1		X	80	30x72x29	NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 2/13/81

Complete by Earl L. Linaburg

43

Area Laboratory No.

Title Janitorial Storage Area

Equipment List

Room size 8' x 10'

Equipment Item	Function	Estimated Cost (\$000/a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Cleaning Cart 1	Carry cleaning supplies	0.20 [±] 0.10	Janitor	NA	1		X	75	62x19x43	NA	NA
Broom 1	Sweeping	0.02 [±] 0.01	Janitor	NA	2		X	5	Variable	NA	NA
Dry Mop 1	Dusting	0.02 [±] 0.01	Janitor	NA	1	X		5	Variable	NA	NA
Wet Mop 1	Wash floor	0.01	Janitor	NA	2	X		5	Variable	NA	NA
Sink 1	Cleaning water	0.30 [±] 0.10	Janitor	NA	1		X	75	24x24x20	NA	NA
Vacuum Cleaner 1	Floor maintenance	0.20 [±] 0.10	Janitor	NA	1	X		25	15x12x42	NA	NA

- (1) Essential
(2) Desirable
(3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/13/81Complete by Earl L. LinaburgArea Laboratory No. 43

Equipment List

Title Janitorial Storage Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)	
Floor scrubber, polisher 1	Polish floors	0.05± 0.10	Janitor	NA	1		X	50	18 dia x 42	110 NA
Additional Equipment 1	Miscellaneous small items to completely equip area	0.20	Janitor	NA	Variable			Variable	110 or NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/13/81Complete by Earl L. Linaburg

44

Area Laboratory No. 44

Equipment List

Title Central Cylinder Gas Storage Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Gas Manifold 1	Banking of like gases for inhouse feed	1.31 0.50	General Staff	NA	2		X	200 Variable	NA	NA
Cylinder trucks 1	Movement of gas cyl.	0.081 0.05	General Staff	NA	2		X	50 24x12x40	NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/13/81

Complete by Earl L. Linaburg

Area Laboratory No. 45

Title Equipment Maintenance Area

Equipment List

Assume room size 20' x 20'

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area ^(c)	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. ^(d) (in.)	
Tool Set 1	Repair mechanical Electrical	0.60 [±] 0.20	Tech. Mech., Elect.	NA	2		X	300	30x12x48	NA
Meter, fluke 8074A 1	Testing, electrical	0.20 [±]	Tech. Elec.	NA	1	X		2	3x1x6	119 or DC
Oscilloscope 1	Testing, electrical	4.0 [±] 0.50	Tech. Elec.	NA	1		X	1	8x10x16	110
Additional Equipment 1	Miscellaneous small items to completely equip area	1.1	Tech. Elec.	NA	Variable			Variable	Variable	110 or NA

- (1) Essential
(2) Desirable
(3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 2/13/81

Complete by Earl L. Linaburg

Area Laboratory No. 46

Title Laundry Area

Equipment List

Assume room size 20' x 20'

Equipment Item	Function	Estimated Cost (\$000/yr)	Operator Title	Capacity of Equipment (throughput per unit of time)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Washer, clothes 1	Washing soiled linen	0.50 [±] 0.20	Custodian	NA	2		X	29x25x43	110	Water lines H & C
Dryer, clothes 1	Drying linen	0.40 [±] 0.20	Custodian	NA	2		X	29x27x43	220	NA
Tables 1	Sort & fold	0.13 [±] 0.05	Custodian	NA	2		X	30x72x29	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	0.2	Custodian	NA	Variable			Variable	110 or NA	NA

- (1) Essential
(2) Desirable
(3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/10/81

Complete by GES/RVA

47

Area Laboratory No.

Equipment List

Title Central Power Area

Equipment Item	Function	Estimated Cost (\$000) ^a	Operator Title	Capacity of Equipment (throughput per unit of time) ^b	No. Required for the area/lab	Expected Life		Size		Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Transformer 1	Transfer Alternating Current	20	Engineer	15,000 Volt Ampere	6		X	Var.	80x96	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	2.0	Engineer	NA	Variable			Variable	Variable	110 or NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/12/81
 Complete by GES/RVA
 Area Laboratory No. 48
 Title Central Standby (Emergency) Power Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)		
Diesel Generator 1	Power Supply	140	Engineer	900 kw	2		X	Var.	48x1400x72	NA	12-15 ft. Ceiling for Exhaust System
Parallel Switch Gear 1	Electrical Controls	20	Engineer	NA	2		X	Var.	36x54	NA	NA
Fuel storage Tank 1	Fuel retainer	10	Engineer	10,000 gal	1		X	20,000	240x96x60	NA	NA
Muffler 1	Noise reduction	0.80	Engineer	NA	2		X	Var.	120x36	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.0	Engineer	NA	Variable			Variable		110 or NA	

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 3/10/81

Complete by GES/RVA

Area Laboratory No. 49

Title Central Water Supply Conditioning Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)		
Water Softener 1	Removing hardness from the water	25	Engineer	100,000 gal/day	2		X	Var.	120x300x180	110 Biweekly regeneration
Deionizer 1	Reducing ionic impurities from the water	100 ± 20	Engineer	2500 gal/day	1		X	Var.	180x360x300	110 Water pump
Ultrafiltration Units 1	Providing reagent grade water	1.5	Technician	50 gal/hour	25	X		50	30x10x30	110 Water pump

- (1) Essential
(2) Desirable
(3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/10/81

Complete by CES/RVA

Area Laboratory No. 50

Title Central Wastewater Conditioning Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)	
Waste Water Treatment System 1	Reducing Pollutants	800	Engineer	100,000 gal/day	1		X	Variable	460	Large space requirements

- (1) Essential
(2) Desirable
(3) Ideal

- (a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/10/81

Complete by GES/RVA

Area Laboratory No. 51

Title Central Air Handling Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)		
Centrifugal Chiller 1	Air cooler and Dehumidifier	200	Engineer	900 ton	1		X	Var.	156x216x 96	460 3 Phase
Air Supply System 1	Facility Ventilation	100 ±20	Engineer	900 ton	1		X	Variable	110	NA
Air Exhaust System 1	Facility Ventilation	100 ±20	Engineer	900 ton	1		X	Variable	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	3.0	Engineer	NA	Variable			Variable	110 or NA	

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date 3/10/81
 Complete by GES/RVA
 Area Laboratory No. 52
 Title Central Heating Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Boiler, Primary 1	Steam production	60	Engineer	500 horse power	1		X	40,000 348x120	330/ 440	3 Phase
Boiler, Secondary 1	Back-up boiler	40	Engineer	300 horse power	2		X	26,000 120x96	330/ 440	3 Phase
Steam Condensation Tank 1	Water/steam Reservoir	3.8	Engineer	NA	3		X	Var. 91x42	NA	NA
Chemical Feed System 1	Water treatment Scale prevention	0.9	Engineer	150 psi	3	X		30 6x8x6	110	NA
Condensation Pump 1	Water recovery	1.2	Engineer	150 psi	3	X		30 6x8x6	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	2.0	Engineer	NA	Variable			Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 3/5/81Complete by GES/RVAArea Laboratory No. 53Title Central Compressed Air/Vacuum Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Dimen. (in.)	
Compressor Motor 1	Compressed Air Generator	1.3	Technician, Mechanical	200 psi	2	X		30	6x8x10	110 NA
Compressor Tank 1	Reservoir for compressed air	0.70	Technician, Mechanical	200 psi	2		X	150	36 dia x 60	NA NA
Vacuum Pump 1	Creates negative pressure	0.70	Technician, Mechanical	200 psi	2	X		30	6x8x10	110 NA

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

(1) Essential
 (2) Desirable
 (3) Ideal

Date 3/10/81

Complete by GES/RVA

Area Laboratory No. 54

Title Central Communications Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (ft ² per unit of line) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Telephone Communications Systems 1	Intra facility and outside office calls	35	Telephone Operator	NA	1		X	Variable	Variable	340/440	60°F < T < 75°F
Air Conditioner 1	Cooling the room temperature	10	Telephone Operator	NA	1		X	Variable	Variable	340/440	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/10/81
 Complete by GES/RVA
 Area Laboratory No. 55
 Title Central Refrigeration Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen. (in.)	
Centrifugal Chiller 1	Refrigeration	200	Engineer	900 ton	3		X	Var.	156x216x96	460 3 Phase
Expansion Tank 1	Refrigerant Expansion	4.0	Engineer	900 ton	3		X	Var.	91x42	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	3.0	Engineer	NA	Variable			Variable	Variable	110 or NA

- (1) Essential
 (2) Desirable
 (3) Ideal
- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/13/81

Complete by Earl L. Linaburg

Area Laboratory No. 56

Equipment List

Title Central Toilet Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.			
Mirror 1	Cleanup	0.08	General Staff	NA	2		X	0.25 36x72	NA	NA
Toilets 1	Defecation	0.13± 0.10	General Staff	NA	10		X	75 20x30x26	NA	Sewer drain, water line
Sink & Cabinet 1	Cleanup	0.15± 0.10	General Staff	NA	10		X	500 20x140(5)	NA	Water & drainage

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/19/81Complete by GES/RVAArea Laboratory No. 57**Equipment List**Title Central Vacuum Cleaning Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Requit. (V)	Special Requirements
						>5 yrs.	>10 yrs.	Wt. (lbs)	Dimen. ^(c) (in.)		
Centralized Vacuum Cleaning System 1	Cleaning	10	Janitor	NA	4		X	Variable	Variable	340/ 440	HEPA filters on exhaust
Additional Equipment 1	Miscellaneous small items to completely equip area	5.0	Janitor	NA	Variable			Variable	Variable	110 or NA	

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 3/2/81

Complete by GES/RVA

Area Laboratory No. 58

Equipment List

Title Dermal Testing Area Rodent

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per time)(b)	No. Required for the area/lab	Expected Life		Size	Voltage Requi. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Hair Clippers 1	Shave animals	0.10	Technician	NA	2	X		2 Dia x8	110	NA
Cages 1	House animals	0.57	Technician	NA	40		X	24x24x16	NA	NA
Restrainers 1	Restrain animals	0.15	Technician	NA	10		X	7x18x8	NA	NA
Lab Cart 1	Perform test	0.16	Technician	NA	1	X		30x20x34	NA	NA
Safety Hood System 1	Personnel protection from volatile and highly toxic chemicals during exposures	7.5	Technician	NA	5		X	72x30x108	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	2.8	Technician	NA	Variable			Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 3/6/81

Complete by Jim Powell

Area Laboratory No. 59

Title Central Automated Facility Systems Control A1

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs.	>10 yrs.			
DEC/PDP11/34A w/64K MEM., Disk Drive and Display Terminal 1	Satellite computer controlling heating, air conditioning, and humidity throughout the facility	40	Computer Operator	NA	1	X		50 25x25x25	120 vac	60°F<T<75°F
Satellite Computer Software 1	Programming	5.0	Programmer	NA	1		X	NA NA	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.5	Programmer	NA	Variable			Variable	110 or NA	

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 2/13/81
 Complete by Earl L. Linaburg
 Area Laboratory No. 60
 Title Administrative Offices Area

Equipment List

Assume 2 Executive offices and 3 secretaries

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimension (in.)		
Executive Desk 1	Work area	0.50± 0.10	Executive	NA	2		X	150	30x72x29	NA	NA
Swivel Chair 2	Work area	0.18± 0.05	Executive	NA	2		X	30	35x35x37	NA	NA
Side Chair 1	Visitor seating	0.10± 0.05	Visitor	NA	6		X	20	35x35x37	NA	NA
Credenza 1	Filing	0.40± 0.10	Executive	NA	2		X	75	20x60x29	NA	NA
Secretarial Desk 1	Secretary	0.28	Secretary	NA	3		X	150	30x60 w/ 20x37 typing ped.	NA	NA
Posture Chair 1	Secretary	0.13	Secretary	NA	3		X	30	35x35x37	NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 2/13/81Complete by Earl L. LinaburgArea Laboratory No. 60Title Administrative Offices Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.			
File Cabinets	Filing	0.20± 0.05	Secretary	NA	3		X	26x15x60	NA	NA
Typewriters	Typing	1.0	Secretary	NA	3		X	20x15x10	NA	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/13/81

Complete by GES

Area Laboratory No. 61

Title Neurotoxicology Studies Area, Chicken

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the arealab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs			
Cage Rack 1	Hold cages	2.2	Technician	Hold 32 chicken cages	12		X	72x30x72	NA	Automatic watering system
Cage, Chicken 1	House chickens	0.02	Technician	2	576 (384 in use, 192 exchange)	X		18x18x18	NA	NA
Feeder, Chicken 1	Hold diet: pellet or meal	0.02	Technician	900 gms	576	X		4x5x5 4x4x7	NA	NA
Balance, 1200 or 4400 gm cap 1	Weigh chickens, feeders, etc.	0.30	Technician	20 cages animals & feeder per hour	4		X	8x14x7	110	NA
Table, Utility 1	Hold balance, feeders etc.	0.30	Technician	NA	4		X	60x30x30	NA	Casters
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	7		X	72x30x108	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/13/81
 Complete by GES
 Area Laboratory No. 61
 Title Neurotoxicology Studies Area, Chicken

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the are/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Worktable w/sink 1	Work area	3.5	Technician	NA	4		X	500	84x29x37	NA	NA
Balance 1	Feed weighing	3.7± 0.10	Technician	Samples 40/hr	1		X	10	8x12x4	110	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.5	Technician	NA	Variable			Variable	Variable	110 or NA	NA

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Equipment List

Date 3/10/81

Complete by Dennis Hsieh

Area Laboratory No. 62

Title In Vitro Genetic Toxicology Studies Area

Equipment Item	Function	Estimated Cost (\$000)(a)	Operator Title	Capacity of Equipment (throughput per unit of time)(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimen (in.)		
Safety Hood System 1	Provides a sterile area for microbiological work and protects workers from exposure to chemicals	7.5	Microbiologist	NA	7		X	800	72x30x108	110	Must meet safety requirements for chemical carcinogens
Bench-top Agar Sterilizer 3	High temperature, short exposure sterilization of agar	4.0 ± 1.0	Microbiologist	3 liter of agar per 45 min	1	X		45	15x13x20	115	NA
Automatic Stacking Carousel-type Petri-Dish Filler 3	Automatic pouring and stacking of agar plates	7.0 ± 1.0	Microbiologist	320 plates per 20 min	1	X		200	20x24x35	115	NA
Constant Temperature Incubator with Independent Vent 1	To incubate bacterial culture plates at 37°C	2.5 ± 0.50	Microbiologist	4.8 cu ft for 200 plates	1 or more	X		105	21x22x39	120	Ventilation through chemical hood
Isotemp Dry Bath 1	To incubate culture tubes at 37°C	0.55 ± 0.05	Microbiologist	120 tubes	7	X		17	23x38x10	120	NA
Tissue Homogenizer 1	To prepare postmitochondrial preparation for metabolic activation	2.5 ± 0.50	Microbiologist	NA	1	X		10	10x12x20	115	Operated under sterile conditions

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

(1) Essential
(2) Desirable
(3) Ideal

Date 3/10/81

Complete by Dennis Hsieh

Area Laboratory No. 62

Title In Vitro Genetic Toxicology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size Dimensions (in.)	Voltage Reqmt. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.			
Programmable Peristaltic Pump 2	To automatically dispense equal volumes of medium into test tubes	3.0 [†] 0.30	Microbiologist	10 ml - 7500 ml per min	1	X		12x12x6	110/120	NA
Remote controlled hotplate with magnetic stirring 2	To heat solutions and media	0.15 [†] 0.05	Microbiologist	NA	1	X		8x7x5	120	Remote control
Bunsen lamp and bacteriological loops 1	For culture transferring and aseptic operations	0.20	Microbiologist	NA	2	X		3x6x3	NA	Gas lines
Surgical tools 1	For surgical excising of animal livers	0.20	Microbiologist	NA	1 set	X		Various	NA	NA
Worktable w/sink 1	Work area	3.5	Microbiologist	NA	9		X	84x29x37	NA	NA
pH Meter 1	Measurement of acidity and preparation of buffers	1.0	Microbiologist	Variable	1	X		7x15x9	105/125	NA

- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

- (1) Essential
 (2) Desirable
 (3) Ideal

Date March 15, 1981
 Complete by Dennis Hsieh

Area Laboratory No: 62

Title In Vitro Genetic Toxicology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqm. (V)	Special Requirements
						> 5 yrs.	> 10 yrs.	Wt. (lbs)	Diment. (in.)		
Electronic bacteria colony counter 2	Automatically score colony numbers of petri-dish plate	8.5 + 0.50	Microbiologist	10 plates per min.	1	X		30	24x12x26	115	Automatic data processor optional
Oven, gravity convection 1	For sterilizing lab glassware and equipment	0.55 + 0.05	Microbiologist	20 ft. ³	1	X		15	27x26x30	120	
Microfiltration system 1	For sterilizing heat-labile post-mitochondrial supernatant mix	0.15 + 0.05	Microbiologist		1	X		2	1" diam. x 6" height	NA	Vacuum lines
Autoclave 1	Sterilize lab glassware, media, petri-plates, etc.	3.5 + 0.50	Microbiologist	20 ft. ³	4	X		120	19x31x29	NA	Steam lines at above 15 psi
Centrifuge rotor 1	Preparation of post-mitochondrial supernatant fraction	0.80	Microbiologist	Variable	1	X		5	Variable	NA	
Additional Equipment 1		2.0									

(1) Essential
 (2) Desirable
 (3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height

Date 3/15/81
 Complete by Dennis Hsieh
 Area Laboratory No. 62
 Title In Vitro Genetic Toxicology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqmt. (V)	Special Requirements
						>5 yrs.	>10 yrs.	Dimen. ^(c) (in.)		
Refrigerator	To keep buffer, co-factors, and other reagent solutions in cold	2.0± 0.30	Microbiologist	21 cu ft	1	X		300 30x32x71	105/120	Explosion proof
Rotary evaporator	To evaporate solvent from sample solution	1.7± 0.20	Microbiologist	10 ml per hr	1	X		45 31x36x36	110/120	Vacuum lines, dry ice
Nitrogen gas analytical evaporator	To evaporate solvent from small sample solutions	0.45	Microbiologist	20 fingers	1	x		10 22x22x32	NA	N ₂ gas cylinders
Electronic microbalance	For weighing g quantities of chemicals	8.5± 3.5	Microbiologist	1 to 2000 g	1	X		10 10x16x16	110/120	NA
Mechanical top loading balance	To weigh ordinary (mg+) quantities of chemicals and medium ingredients	1.9± 0.10	Microbiologist	1 to 2000 g	1	X		10 10x8x10	110/220	NA
Glovebox	Provides safe space for weighing carcinogenic and other hazardous chemicals	4.5	Microbiologist	45 cu ft	1	X		260 30x51x38	115	Enough space to accommodate the balances

- (1) Essential
 (2) Desirable
 (3) Ideal
- (a) Estimated average cost for item to include a cost range around the average.
 (b) Report throughput in samples per hour or 8-hour day if applicable.
 (c) Record dimensions in order, width x depth x height:

Date 3/10/81Complete by Dennis HaiehArea Laboratory No. 62Title In Vitro Genetic Toxicology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (Throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqt. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Continuously adjustable micropipet sampler	Pipetting	0.15± 0.05	Microbiologist	2ul to 1000ul	35	X		0.25	2 dia x 10	NA	Pipet tips should be sterilized
Refrigerated centrifuge	Preparation of pure mitochondrial supernatant fraction of cellular homogenates	8.5± 1.5	Microbiologist	6000ml	1	X		650	32x37x48	208	NA
Water bath shaker	To grow tester bacterial strains	1.5± 0.50	Microbiologist	16, 50 ml flasks	1	X		60	15x23x10	115	Slow agitation
Deep Freezer	To store tester bacterial cultures, chemicals, and biochemicals	3.5± 0.50	Microbiologist	9 cu ft	1	X		600	28x60x43	208	NA
Hazardous chemical disposal system	To contain solid wastes contaminated with chemical carcinogens	0.05	Microbiologist	1 cu ft	7	X		2	1x1x1	NA	Must meet safety requirements
Vortex mixer	To mix reagents in a test tube	0.15	Microbiologist	NA	7	X		9	5x6x6	115	NA

(1) Essential

(2) Desirable

(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

Date 3/15/81

Complete by Dennis Hsieh

Area Laboratory No. 62

Title In Vitro Genetic Toxicology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqmt. (V)	Special Requirements
						>5 yrs	>10 yrs	Wt. (lbs)	Dimensions (in.)		
Electronic bacteria colony counter 2	Automatically score colony numbers of petri-dish plate	8.5 [±] 0.50	Microbiologist	10 plates per min	1	X		30	24x12x26	115	Automatic data processor optional
Oven, gravity convection 1	For sterilizing lab glassware and equipment	0.55 [±] 0.05	Microbiologist	20 ft ³	1	X		15	27x26x30	120	NA
Microfiltration system 1	For sterilizing heat-labile post-mitochondrial supernatant mix	0.15 [±] 0.05	Microbiologist	Variable	1	X		2	1"dia x 6"height	NA	Vacuum lines
Autoclave 1	Sterilize lab glassware, media, petri-plates, etc.	3.5 [±] 0.50	Microbiologist	20 ft ³	4	X		120	19x31x29	NA	Steam lines at above 15 psi
Centrifuge rotor 1	Preparation of post-mitochondrial supernatant fraction	0.80	Microbiologist	Variable	1	X		5	Variable	NA	Avoid metal stress
Additional Equipment 1	Miscellaneous small items to completely equip area	2.0	Microbiologist	NA	Variable			Variable	Variable	110 or NA	NA

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

- (1) Essential
(2) Desirable
(3) Ideal

Date 3/16/81

Complete by GES/RVA

Area Laboratory No. 63

Title In Vivo Genetic Toxicology Studies Area

Equipment List

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size		Voltage Reqm. (V)	Special Requirements
						> 5 yrs	> 10 yrs	Wt. (lbs)	Dimen. (in.)		
Cage Rack, 30 rat cages or 60 mouse cages 1	Hold cages	2.2	Technician	Hold 150 rats or 300 mice	6		X	400	72x30x72	NA	Automatic watering system
Cage, rat 1	House rats	0.02	Technician	Hold 5 rats	360	X		2	22x12.5x8	NA	NA
Cage, mice 1	House mice	0.01	Technician	Hold 5 mice	720	X		1	9.25x12.5x8	NA	NA
Feeder, rat 1	Hold diet: pellet or meal	0.02	Technician	900 gms	360	X		1	4x5x5 4x4x7	NA	NA
Feeder, mouse 1	Hold diet: pellet or meal	0.01	Technician	150 gms	720	X		1	3x4x4 3x3x6	NA	NA
Balance, 1200 or 4400 gm cap 1	Weigh rodents, feeders, etc.	0.30	Technician	20 cages (animals & feeders per hour)	1		X	10	3x14x7	110	NA

(1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.
(b) Report throughput in samples per hour or 8-hour day if applicable.
(c) Record dimensions in order, width x depth x height

Date 3/16/81Complete by GES/RVAArea Laboratory No. 63**Equipment List**Title In Vivo Genetic Toxicology Studies Area

Equipment Item	Function	Estimated Cost (\$000) ^(a)	Operator Title	Capacity of Equipment (throughput per unit of time) ^(b)	No. Required for the area/lab	Expected Life		Size	Voltage Reqt. (V)	Special Requirements
						>5 yrs	>10 yrs			
Table, utility 1	Hold balance, feeders, etc.	0.30	Technician	NA	1		X	60x30x30	NA	Casters
Safety Hood System 1	Personnel protection from toxic chemicals during exposure	7.5	Technician	NA	2		X	72x30x108	110	NA
Worktable w/sink 1	Work area	3.5	Technician	NA	1		X	84x29x37	NA	NA
Additional Equipment 1	Miscellaneous small items to completely equip area	1.5	Technician	NA	Variable			Variable	110 or NA	NA

- (1) Essential
(2) Desirable
(3) Ideal

(a) Estimated average cost for item to include a cost range around the average.

(b) Report throughput in samples per hour or 8-hour day if applicable.

(c) Record dimensions in order, width x depth x height

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