

Therefore, the daily production rate can be expressed in terms of exterior wall area as follows:

$$0.0568 \text{ ft}^2/\text{ft}^3 \times 19,300 \text{ ft}^3/\text{day} = 1096 \text{ ft}^2/\text{day}.$$

The hourly rate, adjusted and converted to metric units is:

$$1096 \text{ ft}^2/\text{day} \div 8 \text{ hr/day} \times 0.0929 \text{ m}^2/\text{ft}^2 \times 7/8 \text{ adj} = 11.1 \text{ m}^2/\text{hr}.$$

Dividing the hourly labor rate and equipment costs by the hourly production rate gives costs in terms of dollars per sq meter:

$$\text{Labor: } \$132.40/\text{hr} \div 11.1 \text{ m}^2/\text{hr} = \$11.89/\text{m}^2$$

$$\text{Equipment: } \$123.04/\text{hr} \div 11.1 \text{ m}^2/\text{hr} = \$11.05/\text{m}^2$$

The total cost per sq meter is the sum of the labor and equipment costs: \$22.94.

#### A.4 BUILDING CONTENTS

The surfaces of building contents are considered in four broad categories: hard-surface furnishings, soft-surface furnishings, electronic equipment, and paper products. Each of these categories consists of a variety of items. For example, hard-surface furnishings in a home include such items as stoves, refrigerators, cabinets, tables, bathroom fixtures and so forth. For convenience, the inventory of hard-surface items found in the representative 1600 sq foot home is defined as a single unit of hard-surface furnishings. Similarly, the inventory of items in this representative housing unit for the other three contents categories also defines a single unit for each category.

Information for some of the decontamination operations described below was supplied by sources who deal with special cleaning situations, such as smoke damage, which require very thorough work. Consequently, the rate and cost data reflect this thoroughness. However, at lower contamination levels this intensive effort and the associated cost may be excessive. One solution is to develop for these situations a less intensive set of operations. In fact, we have taken a simpler approach. Namely, we define selected procedures developed below as intensive methods, where the less intensive application of the procedure that underlies it is an operation. For example, for hard-surface furnishings we develop the rate and costs for an intensive vacuuming. A less

intensive vacuuming is defined as the operation, and the vacuuming described in the text is characterized by the method "double-vacuuming", or v, using the symbols described in Table 1.1. Other procedures that are treated in this way are the dusting and washing of hard-surface furnishings and the vacuuming of soft-surface furnishings.

The assumed rates for these less intensive operations are twice the rates developed in the text for the corresponding procedures; and the costs are assumed to be exactly half as great. Finally, the decontamination efficiencies of these operations are taken at 60 percent of the efficiencies of the corresponding procedures.

In practice, much of the increase in speed and reduction in cost could result from little or no cleaning of surfaces that are not easily accessible, but which likely have received less contamination.

#### A.4.1 Hard-Surface Furnishings

The number of units of hard-surface furnishings in the representative 10,820 sq foot commercial structure and the number in the representative 22,400 sq foot industrial structure are scaled according to this residential unit and depend on the relative effort required to decontaminate the hard-surface items over an equal amount of floor space. Thus, if 1.5 times the effort is required to decontaminate the hard-surface furnishings in 1600 sq feet of commercial floor space, then there are 1.5 units of hard-surface furnishings per 1600 sq feet of floor space.

Because the basic units of the building contents categories are based on the contents of the representative single-family home, it is not necessary to devote special attention to commercial and industrial buildings separately. Several of the radiation decontamination operations applied to building contents are quite similar to procedures used in the restoration cleaning industry. This industry includes businesses that clean properties that have sustained fire, water, or other such damage. According to sources at Cleaning Consulting Services in Seattle, Washington, and the Institute of Fire Restoration (a branch of the Association of Specialists in Cleaning) in Falls Church, Virginia, cleanup of smoke damage and smoke residue is likely to be the same or nearly the same as some radiation decontamination operations. For this reason, organizations in this industry in general and the Institute of Fire Restoration in particular are primary sources of information.

It should be added that some firms in the restoration cleaning industry use computer programs to estimate costs. One such program was developed by the representative at the Institute of Fire Restoration and sells for about \$4,250. Such programs might be useful in refining the cost estimates presented here.

##### A.4.1.1 Vacuum

Vacuuming as a decontamination technique is described elsewhere in this appendix (see Sections A.1.5.1 and A.3.1.1). According to the source at the Institute of Fire Restoration, a thorough vacuuming of the hard-surface

furnishings in a single-family home is likely to take a crew of four about eight hours. Each member of the crew would be equipped with a tank vacuum costing \$400 each. This source added that cleaning operations such as vacuuming generally have a materials cost of about five percent of the total cost.

Since this procedure is very similar to vacuuming walls (see Section A.3.2.4), we use the same per-worker hourly labor and equipment costs, \$11.14 and \$1.50 respectively. To these we add a materials cost such that it is equal to five percent of the total. The amount for materials per worker comes to \$0.67 per hour and the total cost per hour per worker is \$13.31. For a crew of four, the total cost is \$53.24; the labor cost is \$44.56, the equipment cost is \$6.00, and the materials cost is \$2.68.

Applying the one hour per day adjustment, the effective rate is

$$1 \text{ unit/day} : 8 \text{ hr/day} \times 7/8 \text{ adj} = 0.109 \text{ units/hr}$$

Dividing the hourly costs by the 0.109 units per hour gives the costs per hard-surface furnishings unit. The total cost per unit is \$488.44. The labor, equipment, and materials costs are \$408.81, \$55.04, \$24.59 per unit, respectively.

#### A.4.1.2 Dust

The dusting procedure involves wiping the contaminated surfaces with a dry cloth. The action of wiping the surface should help dislodge particles that vacuuming would not pick up. The source at the Institute of Fire Restoration advised that dusting has little effectiveness unless it follows vacuuming. Without prior vacuuming, dusting does little more than smear the contaminating material around.

A possible modification to this procedure is to use commercial products such as "Endust" which are intended to be sprayed on the dust cloth and thereby improve its effectiveness in picking up fine particulate matter. A representative at The Drackett Products Company in Cincinnati, Ohio, explained that their product, Endust, is a light mineral oil. The source did not know if there would be any particular problem or advantage in using this product to remove radioactive particles. The source at the Institute of Fire Restoration advised that products such as Endust may not be effective.

According to this same source, a thorough dusting of the hard-surface furnishings in a single-family home would require a crew of four and take about 16 hours. The labor costs are assumed to be the same in this procedure as in similar operations such as vacuuming, \$11.14 per hour per worker. Since specialized equipment is not required, the equipment costs are nominal. As is done in the case of the wash and scrub operation (see Section A.3.2.2), labor is assumed to comprise 80 percent of the total cost. Following information from the Institute of Fire Restoration representative, we assume that materials

comprise five percent of the total. This leaves 15 percent for equipment. Per worker this comes to \$2.09 per hour for equipment and \$0.69 per hour for materials. For a crew of four the hourly costs are: labor, \$44.56; equipment, \$8.36; materials, \$2.76; total, \$55.68.

Applying the one hour per eight-hour shift adjustment, the effective rate is

$$1 \text{ unit}/16 \text{ hr} \times 7/8 \text{ adj} = 0.055 \text{ units/hr}$$

The costs per unit are found by dividing the hourly costs by the hourly production. The total cost per unit of hard-surface furnishings is \$1012.36. This reduced to \$810.18 for labor, \$152.00 for equipment, and \$50.18 for materials.

#### A.4.1.3 Water Wash

In this procedure the hard surfaces are rubbed with a wet cloth. The primary source of information is the representative for the Institute of Fire Restoration. This source mentioned that, as with dusting, this procedure should be preceded with vacuuming; otherwise the water wash would accomplish little more than spreading the contaminant around.

This source estimated that a water wash would take about as long as the dusting procedure (16 hours) with the same size crew (four people). However, following the wash it would be necessary to polish the hardwood surfaces. This would take another four hours of work for two people.

The wash part of the procedure would have the same cost and rate as dusting. Assuming the same labor, equipment, and material costs per worker per hour, the cost for polishing are as shown in Table A.4.1.1. The hourly rate of polishing is

$$1 \text{ unit}/4 \text{ hr} \times 7/8 \text{ adj} = 0.219 \text{ units/hr}$$

The rate of the combined steps is set equal to that of the more costly one, wash. This means that  $0.055/0.219 = 0.251$  polishing crews would be need for each washing crew. This information is summarized in Table A.4.1.1.

#### A.4.1.5 Strippable Coating

The application of strippable coating for the purpose of decontamination is described in Section A.1.5.6. The use of strippable coating for the decontamination of hard-surface furnishings is different because the application of the strippable coating material must be more precise when used on hard-surface furnishings than when used on surfaces such as walls or roads. When used on walls, the cost is estimated at \$1.78 per sq meter based on an application rate



TABLE A.4.1.1. Summary of Data for Water Wash Operation

Procedure	Rate (u/hr) (a)	Cost (1982\$/u)			
		Total	Labor	Equip.	Matl.
Wash	0.055	1012.36	810.18	152.00	50.18
Polish	0.219	127.13	101.74	19.09	6.30
Total	0.055	1139.49	911.92	171.09	56.48

(a) Hard-surface furnishing units per hour. See text for explanation.

of 40 sq meters per hour. Unfortunately, neither the cost per sq meter or the coverage rate for walls can be extended in a useful way to hard-surface furnishings.

It is assumed that, instead of using spray equipment, a cleaning worker applies the strippable coating material directly to the hard-surface furnishings, and per unit of time, the worker uses one-tenth as much strippable coating material as is applied by spraying. Then the hourly cost of strippable coating material is \$7.08. Using the same rate and crew as for wiping hard-surface furnishings, the cost per worker per hour is \$11.14, the cost for equipment is \$2.09, and the time necessary for a crew of four to apply the material is 16 hours. On this basis, the total labor cost per hour for application is \$44.56, the total equipment cost per hour for application is \$8.36, and the total material cost per hour is \$28.32.

The output rate for application is 0.055 hard-surface furnishing units per hour. The corresponding costs per unit are found by dividing the hourly costs by the hourly output. The results are shown in Table A.4.1.2.

TABLE A.4.1.2. Summary of Data for Application and Removal of Strippable Coating on Hard-surface Furnishings

Procedure	Rate (u/hr) (a)	Cost (1982\$/u)			
		Total	Labor	Equip.	Matl.
Application	0.055	2489.27	810.18	152.00	514.91
Removal	0.055	1109.46	607.64	115.64	386.18
Total	0.055	3598.73	1417.82	267.64	901.09

(a) Hard-surface furnishing units per hour. See text for explanation.

As described in Section A.3.2.9, the removal of strippable coating from exterior walls is a little slower than the rate of spray application (35 sq meters per hour versus 40 sq meters per hour). With manual

application, removal is likely to be somewhat more rapid than application. Therefore, the removal crew is assumed to consist of three workers. As with dusting, the cost breakdown is 80 percent for labor, 15 percent for equipment, and 5 percent for materials. Removal is assumed to include the collection of the removed coating prior to eventual hauling and disposal.

#### A.4.1.7 Remove and Replace

The removal and replacement of hard-surface furnishings is the most involved, complex, and costly operation for this category. The removal and replacement of such items as built-in cabinets, plumbing fixtures, and appliances are particularly costly. The primary source of information for this operation is a representative of the claims department of the Allstate Insurance Company in Seattle, Washington. This source was not able to give an estimate of the cost of removing and replacing hard-surface furnishings as a whole, but he did supply the representative costs of removing and replacing the major items comprising the basic unit of hard-surface furnishings.

According to this source, the cost of removing and replacing kitchen cabinets is about \$80 per lineal foot. For a typical kitchen the cost is about \$800. The cost for a kitchen sink with plumbing is about \$400. Replacing a stove costs from \$500 to \$1000. We use \$750 as representative. Replacing a refrigerator costs between \$600 and \$1000. The figure of \$800 is taken as representative. The replacement of a hot water heater costs about \$225 and the replacement of a furnace costs about \$2000 or more. The figures for a dining room table and a cabinet are \$1000 to \$1200 and \$500, respectively.

The replacement costs for living room furnishings, including a bookcase, coffee table, two end tables and two lamps are \$150, \$100-150, \$150-200, and \$100, respectively. The hard-surface furnishings in the master bedroom (dresser with mirror, two nightstands, and bedframe) are estimated to have replacement costs of \$300-\$375, \$150-200 and \$200, respectively. Using the figure of \$675 as representative of the items in the master bedroom, we estimate the furnishings in the second bedroom to have a replacement cost of \$475. Replacement of the items in the bathroom are estimated at \$400 for a vanity, \$200 for the sink, \$1200 for the tub and \$100 for the toilet.

The total of the foregoing items is \$10,175. It should be noted that the list of items is not complete. Not included are such furnishings as air conditioners, dish washers, freezers and so forth. On the other hand, not all households have all of the items listed here. Therefore, we take the figure of \$10,175 as a reasonable approximation of the cost to remove and replace the hard-surface furnishings in a single-family residence.

Because this sum is expressed in 1986 dollars, it is necessary to adjust the figure to 1982 price levels. Following the procedure described in Section A.4.2.4, we get an adjusted total of \$9,126.

Next, it is necessary to disaggregate this total to labor, equipment and materials cost. This is made difficult by the fact that the replacement of some items, such as the living room coffee table, entail very little labor. In

contrast, a large fraction of the cost of removing and installing kitchen cabinets is for labor. The approach taken here is to assume that labor accounts for half the total cost. Materials are assumed to make up almost as much, 45 percent, and equipment is 5 percent. On this basis, the total labor cost is \$4,563; the total equipment cost \$457; and the total cost for materials \$4,106.

Assuming that 40 percent of the labor is involved in removal operations, which require an adjustment for radiation control measures, total labor costs amount to

$$(0.6 + 7/8 \text{ adj} \times 0.4) \times \$4563 = \$4824$$

The total cost for this operation is then \$9387.

Using the wage rates in Means' Building Construction Cost Data, 1982, it would take a crew of one carpenter at \$24.35 per hour and one-and-a-half common building laborers at \$19.40 per hour about 119 hours or nearly three weeks to complete this operation. The adjusted rate is, therefore,

$$1 \text{ unit}/119.2 \text{ hr} = 0.00839 \text{ unit/hr}$$

#### A.4.2 Soft-Surface Furnishings

Soft-surface furnishings include such items as draperies, fabric-covered chairs, sofas, fabric-covered office partitions, and so forth. Not included in this category are carpets, which are considered a separate surface. Carpeted floors are discussed in Section A.3.9.

As with other building contents categories, the basic unit of soft-surface furnishings is defined to be the inventory of soft-surface items in the representative 1600 sq foot home. The number of units of soft-surface furnishings over a similar area of floor space in commercial and industrial properties depends on the relative time required to complete a decontamination operation in those structures, as compared with completing the operation on the items in the representative home. This subject is explained in more detail in Appendix E.

##### A.4.2.1 Vacuum

According to the source at the Institute of Fire Restoration, vacuuming is one of the most practical procedures for removing fine materials from soft-surface furnishings. To vacuum a unit of soft-surface furnishings, a crew of two would need about five hours. Equipment would include vacuums, filters, and related items. Materials, according to this source account for five percent of total costs.

Using the same per-person labor, equipment, and material costs as in vacuuming the hard-surface items (see Section A.4.1.1), the total hourly costs are: labor, \$22.28; equipment, \$3.00; and materials, \$1.34. The total hourly cost comes to \$26.62.

Applying the one hour per shift adjustment, the hourly output rate for this crew is

$$1 \text{ unit}/5 \text{ hr} \times 7/8 \text{ adj} = 0.175 \text{ units/hr}$$

The costs on a per unit basis are calculated by dividing the hourly costs by the hourly production. The total cost per unit is \$152.11. This reduces to \$127.31 for labor, \$17.14 for equipment, and \$7.66 for materials.

#### A.4.2.2 Steam

Steam cleaning is a standard method of cleaning upholstered furniture. However, according to the representative of the Institute of Fire Restoration, steam cleaning is not appropriate for draperies. Since draperies represent a small fraction of the total inventory of soft-surface items, we ignore this difficulty by assuming that part of the steam cleaning operation includes vacuuming of draperies.

The source at the Institute of Fire Restoration estimates that steaming a unit of soft-surface furnishings would take a crew of two people five hours. The rate and crew size are the same as for vacuuming. The estimate of the hourly equipment cost for a single set of steam cleaning equipment, \$4.98, is calculated in Section A.3.9.5. At five percent of the total hourly cost, materials per worker come to \$0.85. The total hourly cost is \$16.97 per worker.

Dividing the hourly production rate into the hourly costs for the whole crew gives the costs per unit for the different input categories. They are \$127.31 for labor, \$56.91 for equipment, and \$9.71 for materials. The total cost per unit comes to \$193.93.

#### A.4.2.3 Foam

The use of acidic foam as a decontamination operation is described in Section A.1.5.5. In addition, the treatment of painted exterior wood walls with foam is described in Section A.3.2.8.

According to the source at the Institute of Fire Restoration, foam can be applied to and removed from a unit of soft-surface furnishings by a crew of two in five hours. In order to estimate the cost of materials it is necessary to divide the total time into the time for application and the time for removal. In Section A.3.2.8 the rate for application is estimated to span about 37 percent of the sum of application and removal times. Because application to soft-surface furnishings must be done with more precision than when applying the



foam to walls, we estimate that almost half the time, 45 percent (two hours and 15 minutes), is required for application. This leaves 55 percent of the five hours (2 hours and 45 minutes) for removal.

With the one hour per shift adjustment, the application rate is

$$1 \text{ unit}/2.25 \text{ hr} \times 7/8 \text{ adj} = 0.389 \text{ units/hr}$$

The removal rate is

$$1 \text{ unit}/2.75 \text{ hr} \times 7/8 \text{ adj} = 0.318 \text{ units/hr}$$

The hourly equipment cost for application that is estimated in Section A.3.2.8 is \$1.96 per hour. Doubling this for the two-man crew gives \$3.92 per hour. The hourly materials cost for application to exterior painted wood walls is estimated at \$3.01. Since the rate of application on soft-surface furnishings would be much slower than on exterior walls, the material cost per hour will be less. Using the standard of five percent of the total cost for materials suggested by the source with the Institute of Fire Restoration, we get a figure of \$0.69 per hour per worker. This is about 23 percent of the application rate on walls, a reasonable figure.

Dividing the hourly costs for application by the application rate gives costs in terms of soft-surface furnishings units. These costs are \$57.28 for labor, \$10.08 for equipment, and \$3.55 for materials.

Removal by vacuuming has a different production rate than vacuuming alone, but the hourly costs of the inputs are the same. Costs per unit of soft-surface furnishings are found by dividing the hourly costs by the hourly production rate. For the two-person crew they are:

$$\text{Labor: } (2 \times \$11.14/\text{hr}) \div 0.318 \text{ units/hr} = \$70.06/\text{unit}$$

$$\text{Equipment: } (2 \times \$1.50/\text{hr}) \div 0.318 \text{ units/hr} = \$9.43/\text{unit}$$

$$\text{Materials: } (2 \times \$0.67/\text{hr}) \div 0.318 \text{ units/hr} = \$4.21/\text{unit}$$

The rate and cost data for soft-surface furnishing are summarized in Table A.4.2.3.1.



TABLE A.4.2.3.1. Summary of Data for Application and Removal of Foam on Soft-Surface Furnishings

<u>Procedure</u>	<u>Rate (u/hr) (a)</u>	<u>Cost (1982\$/u)</u>			
		<u>Total</u>	<u>Labor</u>	<u>Equip.</u>	<u>Matl.</u>
Application	0.389	70.91	57.28	10.08	3.55
Removal	0.318	63.70	70.06	9.43	4.21
Total	0.055	154.61	127.34	19.51	7.76

(a) Soft-surface furnishing units per hour. See text for explanation.

#### A.4.2.4 Reupholster

Reupholstering soft-surface furnishings is an operation that can be applied to sofas, chairs, mattresses, and other soft-surface items except draperies. Here it is assumed that either draperies constitute such a small fraction of the total inventory of soft surface items that it makes little difference to omit them from the operation, or that the operation of reupholstering includes a special vacuuming of the draperies, or that the drapes are replaced as part of this operation.

The primary source of information for this operation was a representative of the Institute of Fire Restoration. This person is familiar with contracting out reupholstering functions. The major items and the costs of reupholstering them are: sofa \$1100, easy chairs \$450 each, mattresses and box springs \$110 each. With one sofa, two easy chairs, two mattresses, and two box springs the total cost is \$2440. To this we add 15 percent for smaller miscellaneous items such as chair seats. This brings the total to \$2806. The GNP implicit price deflator is used to adjust these cost figures from 1986 price levels to 1982 prices. However, because the 1986 index is not available, an estimated value of 115 is used. The index for 1982 is 100. The adjusted reupholstering cost is \$2440.

The source indicated that about half the cost is for labor. It is assumed that materials constitute 35 percent and equipment 15 percent of the cost and that it takes two people 50 hours each to complete the job. The total hourly labor cost is, therefore

$$(0.5 \times \$2440)/55 \text{ hr} = \$22.18/\text{hr}$$

The hourly equipment cost is

$$(0.15 \times \$2440)/55 \text{ hr} = \$6.65$$

The hourly materials cost is

$$(0.35 \times \$2440) / 55 \text{ hr} = \$15.53$$

Even though the items are removed from the home to an upholsterer's shop, the rate is still adjusted for the one hour per shift. Thus, the rate becomes

$$1 \text{ unit} / 55 \text{ hr} \times 7/8 \text{ adj} = 0.0159 \text{ units/hr}$$

The costs per unit are calculated by dividing the hourly costs by the hourly output. This gives \$1395 for labor, \$418 for equipment, and \$977 for materials. The total comes to \$2790.

#### A.4.2.5 Remove and Replace

If the soft-surface furnishings are contaminated severely enough, the removal and replacement of those items might be appropriate. The primary source of information for this operation is a representative of the Claims Department of the Allstate Insurance Company in Seattle, Washington. This source listed the following amounts commonly paid to replace the major soft-surface furnishings: sofa \$800 - \$1200, recliner chair \$400, other easy chair \$200 - \$300, draperies \$400 - \$800 and double bed \$400 - \$700. When a range of costs is given, the amount selected as representative is usually the midpoint of the range. However, if this amount is less than the amount for reupholstering, as given in the previous section, then the amount at the high end of the range is selected in order to maintain the appropriate relative cost level. Also, the replacement cost for the bed apparently includes the frame and headboard. We assume that for each of the two beds the replacement cost for the mattresses and box springs is \$500. Therefore, the replacement costs used are sofa \$1200, two easy chairs \$700, draperies \$600, two beds \$1000. The total of this amount is \$3500.

In addition to this amount, the source estimated the cost of removing the old items at \$75 to \$100. Taking the higher amount, the total for the new furnishings and removal of the old comes to \$3600.

As explained in the section on resurfacing, the total is expressed in 1986 prices. This amount needs to be adjusted to 1982 price levels. Using the GNP implicit price deflator as explained previously, the adjusted total cost is \$3130.

In computing the rate for this operation, only the actual time it takes to remove the items from the structure or move them into the structure is counted. Removal is estimated by the Allstate Insurance representative to take a crew of two about two hours. Moving the new soft-surface furnishings into

the home is estimated to take two people four hours. This makes a total of six hours of labor. With the one hour per shift adjustment for the removal only, the rate for this operation is

$$1 \text{ unit} / (2 \text{ hr} \times 8/7 \text{ adj} + 4 \text{ hr}) = 0.159 \text{ units/hr}$$

According to the source, labor costs for this type of work are about \$10 per hour for each of the two workers. No special equipment is involved other than vehicles, hand dollies, and so forth. Equipment costs are estimated at five percent of the total or \$156.50. This comes to \$26.08 per hour. The major cost category is, of course, materials. After subtracting \$120 for labor and \$156.50 for equipment, the net material cost is \$2853.50. Expressed in terms of dollars per hour, this equals \$475.58.

The labor and equipment costs can be expressed in dollars per unit of soft-surface furnishings by dividing the hourly costs by the hourly production rate. The resulting amounts are \$125.79, \$164.02, and \$2853.50 for labor, equipment, and materials, respectively. The total comes to \$3143.31.

#### A.4.3 Electronic Equipment

Electronic equipment includes such items as televisions, computers, communications equipment, radios, and so forth. A more complete description is given in Appendix E. Because the circuitry in electronic equipment is fairly delicate, the variety of operations for decontamination is limited.

##### A.4.3.1 Vacuum

Two sources provided information on the vacuum cleaning of electronic equipment. One, associated with the Computer Service Center of Battelle Pacific Northwest Laboratories in Richland, Washington, explained that the only procedure they use to clean personal computer circuit boards is vacuuming with a small \$50 Kenmore hand vacuum while spraying a jet of compressed air from a can. Disc drives are cleaned with a cleaning disc. Each machine takes about half an hour to clean. The primary expense is for labor which costs about \$40 per hour. This source was not able to estimate the cost of decontaminating other electronic equipment.

The representative of the Institute of Fire Restoration estimated that to vacuum clean one unit of electronic equipment would take one person four hours. The labor cost for this work is estimated at \$15.00 per hour. Equipment consists of a small vacuum which is estimated to cost about \$1.00 per hour. Based on the source's standard five percent of the total cost for materials, this category costs about \$0.84 per hour. This would cover the cost of the cans of compressed air.