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May 22, 1992

SITE: Carrier Air
BREAK: 13.8
OTHER: VI

Ms. Beth Brown
Remedial Project Manager
U.S. EPA - Region IV
345 Courtland Street, N.E.
Atlanta, GA 30365

Dear Ms. Brown:

Enclosed please find the transcript of the EPA Public Meeting that was held on April 30, 1992, in Collierville, Tennessee.

As you had requested in our telephone conversation of May 21, 1992, I have made corrections on the following pages and lines:

Page 4	line 23
Page 5	line 4
Page 8	line 10
Page 10	line 3
Page 19	line 11
Page 20	line 11
Page 28	line 13
Page 33	line 21
Page 39	line 24

Thank you for your patience in this matter. Please feel free to call if I can be of further assistance.

Sincerely,

Darlene Sullivan

Darlene M. Sullivan
court reporter
enclosures

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7 PUBLIC INFORMATION MEETING
FOR THE
8 CARRIER AIR CONDITIONING
SUPERFUND SITE
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13
Thursday, April 30, 1992
14 7:00 p.m.
Memphis/Shelby County
15 Public Library
91 Walnut Street
16 Collierville, Tennessee
17
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19
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21 WEBER, MORROW, OATES & SANDERS
COURT REPORTERS
22 Suite 1410 - 165 Madison Avenue
First Tennessee Bank Building
23 Memphis, Tennessee 38103
(901) 528-1168
24
25

ORIGINAL

1 P R O C E E D I N G S

2 (April 30, 1992; 7:00 p.m.)

3 MR. TAYLOR: First of all, I would
4 like to welcome everybody to the Carrier meeting
5 tonight. I know it takes away from your personal
6 time to come to public meetings like this. We
7 appreciate you coming. I hope we can answer the
8 questions that any of you may have tonight.
9 My name is Harold Taylor. I am the Chief
10 for the Tennessee/Kentucky Remedial Section of the
11 EPA, Environmental Protection Agency, Region IV.
12 Our offices are headquartered in Atlanta,
13 Georgia. There are ten regions across the United
14 States in the Environmental Protection Agency.
15 Region IV is located in Atlanta.
16 From the Atlanta office we control the
17 eight southeastern states for the Environmental
18 Protection Agency. We work in Alabama, Georgia,
19 Mississippi, Florida, Kentucky, Tennessee, North
20 Carolina and South Carolina.
21 We are here tonight to talk about the
22 Carrier National Priorities List Site. The way
23 the meeting is going to be held tonight is -- we
24 have an agenda. I hope everyone has gotten copies
25 of the handouts up front. If you do, there is one

of them that has got the agenda right up front. This will have the handouts that will be used later on to talk about the Remedial Investigation and the Feasibility Study that has been done on the Carrier Site.

There is also a whole slew of additional handouts that tells you about the Superfund process, and a little bit about the contaminants at the Site and the proposed plan that we are here to discuss tonight, et cetera. So, please, if you have not, make yourself available to all of the copies that are up front.

We have a court reporter here tonight, Darlene, and she is going to be taking down everything that we say so that we have a record of the meeting tonight. Like I said, we are going to run about an hour presentation, or hopefully less, if we can do it. Then we are going to turn the meeting over to questions and answers. I will moderate that.

In order to get through in an hour, what I would ask everyone to do is to hold your questions until the end of the presentation and then we will stay here as long as is needed to answer your questions. With me here tonight, we

1 have a number of people. I would just like to
2 introduce a few of them.
3 With the City, Steve Schertel, the City
4 Administrator. Steve, I appreciate you coming.
5 We met with the mayor earlier today, and Steve, to
6 kind of go over what we are going to present
7 tonight.
8 James Mathis, the City Director of the
9 Public Works Department.
10 Beth Brown. Beth is the Remedial Project
11 Manager at the Environmental Protection Agency.
12 She is the one that is responsible for the
13 day-to-day activities of the Carrier Site for the
14 Environmental Protection Agency.
15 Suzanne Durham. Suzanne Durham is the
16 Community Relations Coordinator. She works at the
17 EPA, Region IV, with Beth and I. She is
18 responsible for the community relations at this
19 Site and other National Priorities List sites.
20 Lee Thomas. Raise your hand. Lee is a
21 hydrologist in the EPA's Water Division. He is
22 here tonight to hopefully answer any of your
23 questions about ground water.
24 Glenn Adams. Glenn is a toxicologist,
25 and he is also in the Water Division. He is here

1 to answer any questions about the public water and
2 health affects and those kinds of things.
3 Pete Raack. Pete is an attorney. He is
4 with our Office of Regional Counsel at the
5 Environmental Protection Agency, Region IV. He is
6 here if you have any questions regarding the law
7 or the statute or matters of those sorts.
8 Jordan English. There we are. Jordan is
9 with the State of Tennessee. He is with the
10 Division of Superfund. Hopefully, if you have any
11 questions about the State's activities, Jordan can
12 answer them.
13 Ed O'Neal. Ed is with the State of
14 Tennessee with the Drinking Water Division, so he
15 is here to answer your questions that you might
16 have about the State program in that regard.
17 So I think we have got enough people here
18 to answer the majority of your questions. If we
19 can't, we will certainly take them down and get
20 back with you. Again, to go over the agenda, we
21 are just basically going to -- I am going to go
22 over the Superfund process in general with you.
23 Beth will go over the Site background and
24 the Remedial Investigation that was conducted at
25 the Carrier Site. Beth will also go over the

1 results of the Feasibility Study and the EPA's
2 recommended alternative. She will tell you a
3 little bit about what we are proposing next for
4 the Site. Then Suzanne Durham will talk about
5 community relations at the Site. Then we will
6 basically open it up for questions and answers.
7 Let me explain just a little bit about
8 Superfund and how it is funded. Congress, in
9 1976, passed a law, the Resource Conservation and
10 Recovery Act, to regulate hazardous wastes, as it
11 is generated at plant sites. That, obviously, was
12 only a regulation that covered hazardous waste as
13 it was generated after 1976. Actually, the
14 regulations to regulate hazardous wastes that were
15 promulgated after that statute were only developed
16 in 1980.
17 But it left sort of a gap. There were no
18 laws to cover dump sites of hazardous substances
19 that were created before that statute was put in
20 place. So in 1980 they passed the Comprehensive
21 Environmental Response, Compensation and Liability
22 Act, or what is commonly known as Superfund, to
23 cover sites that were created before the
24 legislation was put into effect to regulate
25 hazardous wastes.

1 It provides a broad federal authority to
2 respond to known releases or potential releases of
3 hazardous substances. The funds or the monies
4 that run the program are generated from the
5 chemical and petroleum industries. Again, a lot
6 of the information about Superfund, in general, is
7 in several of the handouts up front, so if you
8 need more information, certainly, refer to them.
9 The trust fund itself, which was put in
10 effect to run the Superfund Program, in 1980,
11 Congress passed the statute, and they funded it
12 with one point six billion dollars, and that
13 statute ran out actually in 1984. In 1986, they
14 amended the trust fund and added another eight
15 point six billion dollars. In 1990 they amended
16 the fund yet again and added five point one
17 billion dollars. That current funding lasts until
18 1994.
19 Now, in addition, when this funding is --
20 let me explain a little bit. This fund was really
21 meant to be a sort of self-perpetuating fund. The
22 EPA or Congress recognized that there would be
23 certain abandoned sites where there were no known
24 potential responsible parties, where the
25 government would have to go out and actually spend

1 federal dollars.

2 They also realized there would be a lot

3 of sites where there were potential responsible

4 parties, where we could recoup monies that were

5 spent and actually go back into the fund. So

6 every year we actually spend money, but we recoup

7 a lot.

8 Right now, we are running about seventy

9 percent of our sites nationwide are going what we

10 call potential responsible party lead, where the

11 potential responsible parties; the generators, the

12 transporters, the owners, the operators of the

13 site, are actually paying for the cleanup, and not

14 the federal government.

15 The Superfund strategy is, basically,

16 control of immediate threats first to clean up the

17 worst long-term contamination problems first, to

18 emphasize enforcement, to seek new technologies,

19 and to improve the efficiency of program

20 operations, and to welcome the community's input

21 all through the process.

22 As I started this speech out with, in

23 1976 hazardous substances or hazardous wastes were

24 not regulated at all in this country, by any

25 specific statute. So here we are in 1992, the

1 technologies that we have are developing along
2 with the regulations. In fact, they are
3 developing a little bit behind. So it is
4 basically a new technology.
5 Again, to respond to all of those
6 releases, there are basically two main authorities
7 in the Superfund Program. The first is the
8 removal authority. That gives the EPA the
9 authority to respond to immediate health threats;
10 drums that are out leaking in a field that kids
11 can be exposed to.
12 The other authority is what we are here
13 to talk about tonight. That is our remedial
14 authority, which gives us the authority to respond
15 to long-term, potential threats or the threats
16 that don't cause any immediate human health
17 problems or environmental problems, but if left
18 unattended would in the future.
19 Again, removal actions may include
20 building fences, removing drums, providing
21 alternate water supplies, and relocating residents
22 that are affected by a site. Nationwide, the
23 Agency has conducted over two thousand removals to
24 date, and over four hundred in Region IV.
25 The Remedial Action that we are here to

1 talk about tonight has two main phases. One is
2 the Remedial Investigation and Feasibility Study,
3 which we are here to present tonight, essentially,
4 where we go out and find an extent of a problem
5 site and then a Feasibility Study is to basically
6 determine what technologies are appropriate for
7 that type release.
8 The Remedial Design or Remedial Action is
9 the second major phase of the Superfund Program.
10 That's where we will be a little bit later in the
11 program, at the Carrier Site. That is where you
12 basically go out and design the remedy for the
13 site, and then Remedial Action is where you
14 actually implement that remedy.
15 The EPA learns about hazardous waste
16 sites from a number of avenues. Obviously,
17 through reports of generators, haulers,
18 transporters, citizens' complaints, routine
19 inspections that the Agency goes out on, et
20 cetera. Occasionally, the mayors of towns tell us
21 about releases of hazardous substances. I notice
22 that the Mayor snuck in there in the back. They
23 occasionally let us know about sites.
24 Preliminary assessment is basically the
25 first phase of site identification. Jordan

1 English, for example, gets involved in a lot of
2 these where someone will call in and complain
3 about a site and give the EPA information about a
4 site, and we will go out and basically do a kind
5 of a windshield, walkover inspection to see if
6 there is a problem or there is not a problem.
7 Nationwide, we have done over thirty
8 thousand preliminary assessments of uncontrolled
9 hazardous waste sites. Of those, about nineteen
10 thousand required no further action, and in the
11 remaining eleven thousand it required site
12 inspections.
13 Site inspection is basically the second
14 phase of a site identification, where you go out
15 and actually collect samples, evaluate
16 environmental data; soil, air, water, whatever the
17 particular media is, to see if further action is
18 warranted. After the site investigation, the site
19 will be considered for the National Priorities
20 List.
21 To go on the National Priorities List,
22 every site is ranked using a hazardous ranking
23 system, which is a little hard to explain, but it
24 is basically a system where you give points to a
25 site based upon the hazards that are posed to the

1 health, the public health and environment. It is
2 a numerical system where it allows the EPA to rank
3 sites and hopefully work on the worse sites
4 first.
5 Every site that goes on the National
6 Priorities List has to exceed a score of
7 twenty-eight point five to go on the National
8 Priorities List. Again, this is the slide that
9 more or less explains what the hazardous ranking
10 system is. Again, it is a numerical system where
11 sites are ranked on releases to groundwater,
12 surface water, and air. Those scores are put
13 together. A lot of what impacts is the number of
14 people that are living around the site, the number
15 of residents that may be exposed to that
16 particular release, and any sensitive
17 environmental habitats.
18 Again, the National Priorities List is a
19 list of the nation's highest priority list sites.
20 We update it on an annual basis. Currently, there
21 are a little over twelve hundred sites on the
22 National Priorities List. We are adding,
23 nationwide, about one hundred sites a year.
24 In Region IV, the eight southeastern
25 states currently have one hundred and sixty-three

1 National Priorities List sites. One of the things
2 that is important about the National Priorities
3 List is only the sites that are final on the
4 National Priorities List are eligible for funding
5 out of the federal program.
6 This is just a little rundown to tell you
7 what we are doing nationwide. There is
8 approximately twelve hundred sites. Sixty-three
9 have all the cleanup actions completed. Two
10 hundred and seventy-two have the cleanup work
11 underway. One hundred and fifty are currently in
12 Remedial Design. One hundred and fourteen have
13 the remedies selected.
14 Five hundred and four have the
15 investigations underway, and one hundred and
16 thirty-three have been evaluated for immediate
17 threats, and removal actions, if appropriate, have
18 been taken. Just for reference, on the Carrier
19 Site, we are about here in the middle. We are at
20 the remedy selection stage.
21 Another question that frequently comes up
22 is how long does it take to run a site through the
23 National Priorities List, and the system, how much
24 does it typically cost to remediate the site.
25 From the time the site is discovered to the time

1 it takes to get on the National Priorities List
2 and actually begin the cleanup is running around
3 seven to ten years.
4 The average cost of the National
5 Priorities List sites nationwide is around
6 twenty-six million. The investigations are taking
7 approximately two years to complete. Those
8 investigations are costing approximately one
9 million dollars to complete. The Remedial Designs
10 are taking a year to a year-and-a-half, and they
11 are running about one million dollars to
12 complete.
13 I just want to sort of show everybody
14 where the National Priorities List sites are in
15 Tennessee. These dots are where we have sites.
16 You can see we have four or five right in this
17 corner of the State. I will run down what those
18 sites are. Naturally, we have the Carrier Site,
19 here in Collierville.
20 We have the Gallaway Pit Site, which is
21 in Gallaway. We have the Arlington Blending Site,
22 which is in Arlington, also in Shelby County. We
23 have the Velsicol Hardeman Site, which is in
24 Hardeman County, but the waste was generated here
25 in Memphis. Over in Jackson there is the American

1 Creosote Site. So there are several sites in this
2 vicinity.
3 After you get out of this area, they sort
4 of scatter across the State. There are actually
5 fourteen sites in Tennessee. Twelve are private,
6 and two are federal sites.
7 All right. Now I will turn it over to
8 Ms. Brown.
9 MS. BROWN: As Harold said, my name
10 is Beth Brown. I have been the Remedial Project
11 Manager for the Carrier Air Conditioning Site for
12 the past three years, during the time we have been
13 conducting the Remedial Investigation and
14 Feasibility Study.
15 The information that I am about to
16 provide is only a summary of the past two years
17 that we have been conducting the RI phase, or the
18 Remedial Investigation and Feasibility Study. If
19 you want more information, more details, you can
20 find that information in the Administrative Record
21 that is located right here in the library.
22 As most of you are aware, the Carrier
23 Site is located at the intersection of Byhalia
24 Road and Poplar Avenue. To give you some
25 background on the Carrier Site, Carrier has been

1 manufacturing air conditioning since about 1971.
2 Trichloroethylene, commonly referred to as TCE,
3 was used, until recently, primarily as a solvent
4 to clean and degrease the manufacturing parts
5 necessary to manufacture the air conditioners.
6 Two releases of TCE have occurred near
7 the manufacturing plant building in 1979 and
8 1985. In addition, a waste water lagoon, operated
9 from about 1972 to 1979, apparently accepted waste
10 that was inadvertently contaminated with TCE and
11 zinc.
12 Removal actions were conducted at both
13 the former lagoon and also at both the near-plant
14 spills. Since 1985, groundwater monitoring wells
15 were installed under the oversight of the
16 Tennessee Department of Environment and
17 Conservation.
18 In 1986, as part of the routine
19 monitoring, one of the extraction wells, located
20 at the Town of Collierville's Water Plant 2, which
21 is located on the northwest corner of Carrier's
22 property, was found to be contaminated with low
23 levels of TCE. Operation of that plant has
24 continued under frequent monitoring and still, to
25 this day, does.

1 In 1987 and 1988, Carrier conducted a
2 site investigation under an agreement with TDEC,
3 and found that the Site's soils and groundwater
4 were contaminated. The Carrier Site was proposed
5 on EPA's NPL in 1988 and became final in 1990. In
6 1990, due to the routine monitoring, it was
7 noticed that TCE was continuing to increase, but
8 still below the maximum contaminate levels. As
9 precautionary measures, air strippers were
10 installed to assure that removal of TCE would
11 occur.
12 The EPA conducted an RI at the Site from
13 1990 to 1992, primarily to determine the nature
14 and extent of contamination, and also to assess
15 the risk to human health and the environment.
16 To give you an idea of the work that was
17 performed under the Remedial Investigation, as you
18 can see, we have done quite a bit of work;
19 thirty-seven groundwater monitoring wells,
20 eighty-seven surface, and eighty-seven subsurface
21 soil samples, five surface water samples, and five
22 sediment samples. As part of our routine
23 operations during the RI, air monitoring was
24 conducted at all times.
25 Well, that is a little hard to see on the

1 overhead, but if you look at your handout, I
2 believe the first one is soil borings. This is
3 just to give you an idea of where the soil boring
4 samples were taken. The next one, that is just as
5 hard to read, is the monitoring well location map
6 per monitoring wells that were installed on the
7 property.
8 The next figure is for off-site property
9 wells, which you can probably read a little
10 better. In addition to the off-site property
11 wells that were installed, En Safe, under
12 Carrier's supervision, also monitored Water Plant
13 Number 1, and also monitored two or three other
14 background wells. In addition to that, fifteen
15 samples were taken from private wells.
16 What our investigation revealed was that
17 the contamination was primarily TCE, and was found
18 in both the shallow and deep aquifers at levels
19 above the MCLs. Soil contamination was found in
20 the 1979 and 1985 spill areas and the lagoon
21 area.
22 At this time, Harold, if you could put up
23 the map of the Memphis Sands, if you can find it.
24 It is in your handout, as well.
25 What we found was contamination migrates

1 from soils. This is the lagoon area, and this
2 being the plant area, and migrates from the soils
3 to the shallow aquifer, and primarily flows in
4 this direction to the area, and this is the clay
5 formation, and migrates along the top of the clay
6 to the area where the clay is absent, and then
7 flows to the Memphis Sands in this direction.
8 We also took surface water and sediment
9 samples, and we found no TCE contamination or any
10 other site-related contamination. During the RI,
11 no air releases of TCE occurred except when we
12 were using evasive activities; putting in
13 monitoring wells, or soil borings.
14 The contaminates of concern in the Site
15 soils and the groundwater, as you can see, we have
16 seven; TCE, DCA, DCE, PCE, vinyl chloride, lead
17 and zinc. Of those contaminates, the ones that we
18 are primarily concerned with, and that are driving
19 us to take action at the Site, are lead and zinc.
20 Also, it is -- I am sorry. It is TCE and
21 lead. As part of the RI, we conducted a
22 Treatability Study at the former lagoon, which was
23 soil vapor extraction, and it has been effective
24 in removing TCE and its natural degradation
25 products, being DCE.

1 As you can see, this is the map showing
2 the primary soil contaminated areas at the lagoon
3 area and the 1979 and 1985 spill area.
4 What we concluded from the RI was, one,
5 that we needed to prevent ingestion of the
6 groundwater that was contaminated at or above the
7 MCLs. We also wanted to prevent further
8 contamination of the Memphis Sands, being the
9 soils migrating, or the shallow groundwater that
10 is migrating to the Memphis Sands.
11 We also want to restore the Memphis Sands
12 aquifer to drinking water conditions, and also
13 prevent migration of contaminated soils that would
14 cause the Memphis Sands to exceed MCLs.
15 The next step in the process was to
16 conduct a Feasibility Study. That was conducted
17 in the Spring of 1992 to develop and evaluate
18 cleanup alternatives for the Site. We identified
19 six possible alternatives, and evaluated using
20 eight of the nine evaluation criteria. The ninth
21 criterion, community acceptance, will be evaluated
22 during the public comment period.
23 Technologies we considered for
24 groundwater treatment were ultraviolet
25 light-enhanced oxidation. This technology

1 converts contaminants using a chemical reaction
2 with ultraviolet light to convert contaminants to
3 a less toxic form.
4 Also considered for groundwater treatment
5 is air stripping. This is a technology that
6 involves contaminated water entering a packed
7 tower, flowing downward, and the air flow is
8 upward, volatilizing contaminants from the air.
9 The treated water then exits the tower and is
10 either discharged to streams, municipal water
11 supplies, or publicly owned treatment works. The
12 air either exits the tower and is treated further,
13 or it is released to the air with no treatment.
14 For soil treatment we considered soil
15 vapor extraction. This technology applies a
16 vacuum stress to soils. The contaminated air
17 exits the surface or is treated further.
18 LTTD was also considered. This uses a
19 low temperature to volatilize contaminants from
20 the soils, and the volatilized contaminants are
21 treated by an off-gas system, and the solids are
22 then destroyed in an afterburner or collected by a
23 physical treatment process.
24 For air treatment, we considered carbon
25 adsorption, thermal treatment, and ultraviolet

1 photolysis. Carbon adsorption, in this system,
2 vapors are passed through a chamber that contains
3 carbon. Organic contaminants attach themselves to
4 the carbon.
5 In thermal treatment, the contaminants
6 are heated to such a state that there is complete
7 destruction. In ultraviolet photolysis, it is the
8 same as in ultraviolet light-enhanced oxidation.
9 It uses a different chemical reaction, and can be
10 used for air treatment.
11 The disposal actions that we considered
12 are groundwater discharge and hazardous waste
13 disposal. Groundwater can be discharged after
14 treatment to the public water supply, to surface
15 water, the POTW, which is a publicly owned
16 treatment works, or reinjected into the Memphis
17 Sands.
18 Hazardous waste disposal, from the
19 contaminated groundwater that is treated, when you
20 use carbon, your carbon becomes contaminated, and
21 you can either regenerate it or send it off-site
22 for regeneration or possibly landfill. The soils
23 that were being treated in the LTTD will not be
24 remediated in place but removed and either after
25 treatment placed back on site or shipped off-site

1 for disposal.

2 Using these technologies, we put together
3 six possible alternatives. The first alternative
4 that we are required by CERCLA to evaluate is if
5 no action is taken. In this case no action also
6 considered routine monitoring. The cost for this
7 alternative was approximately one point four to
8 two point two million.

9 In Alternative 2, the North Remediation
10 System is a Treatability Study that I referred to
11 earlier that uses soil vapor extraction at the
12 area of the former lagoon. Also considered for
13 groundwater containment and treatment at Water
14 Plant 2 is the continued operation of the City's
15 well filled with air stripping.

16 Alternative 3 is the same as Alternative
17 2, but also contains soil vapor extraction in the
18 main plant area. The cost for Alternative 2 is
19 about three to four million. The cost for
20 Alternative 3 is approximately five point seven to
21 seven point five million.

22 Alternative 4 includes everything that
23 was included in Alternative 3, but also includes
24 supplemental wells for additional groundwater
25 containment and also to try and capture

1 contamination from the shallow aquifer as it
2 enters the Memphis Sands. We considered for
3 treatment of groundwater at the supplemental wells
4 air stripping or ultraviolet oxidation.
5 Alternative 5 is the same as Alternative
6 3, except that in the area of the plant area,
7 where it is contaminated, we will apply excavation
8 to approximately fifteen feet, and at depths below
9 fifteen feet use soil vapor extraction.
10 Alternative 6 is the same as Alternative
11 4, in that it provides for additional groundwater
12 containment, and it also applies plant area soil
13 excavation and LTTD. I am sorry. The cost for --
14 I don't believe I gave them for 5, either. The
15 cost for 5 is approximately six point one to eight
16 point four million, and for Alternative 6A, nine
17 point eight to fourteen point five. For 6B, which
18 is ultraviolet oxidation, ten to fourteen point
19 nine million.
20 The EPA is recommending Alternative 4A,
21 the North Remediation System, SVE at the main
22 plant area, groundwater containment and treatment
23 at Water Plant 2, and with supplemental wells,
24 utilizing air stripping. This alternative will
25 also include the placement of institutional

1 controls on land and water use on the Site, and on
2 the water use in the general area.
3 At this time I would like to explain the
4 institutional controls that we are considering,
5 and that would be for the shallow aquifer. The
6 shallow aquifer was not considered a primary
7 pathway of concern. The reason we are concerned
8 with the pathway is that it does provide a conduit
9 for contamination in the Memphis Sands.
10 This is primarily an on-site problem.
11 The shallow aquifer does have contamination just
12 off-site. This county has a Water Quality Control
13 Board that basically reviews any applications for
14 the installation of monitoring wells.
15 At this point we feel that that may be
16 adequate and no deed restrictions will be
17 necessary. Also included in this alternative is
18 periodic monitoring to assess the effectiveness of
19 the remedy for at least the next thirty years.
20 The treated water from the extraction
21 wells will either be; utilized in the municipal
22 water supply, which at this time we feel is the
23 best alternative; or discharged to a local water
24 supply; discharged to surface water; or reinjected
25 into the Memphis Sands.

1 Due to the technologies that we have
2 considered; air stripping, and soil vapor
3 extraction, it will be necessary to meet any air
4 quality standards using off-gas systems, such as
5 carbon adsorption, a fume incinerator, or
6 ultraviolet photolysis.
7 Again, we will meet any administrative
8 requirements for the air emission limitations, the
9 water quality discharge, any reinjection
10 requirements and/or approval for the off-site
11 disposal of hazardous waste, those of which will
12 be determined during the Remedial Design.
13 This is an example of soil vapor
14 extraction that is considered for Alternative 4A.
15 Basically, you can see that the extraction wells
16 are located in the soils and vacuum out or
17 volatilize contaminants from the soils and are
18 forced into the vapor-liquid separator and vacuum
19 pump, and is either treated further or is released
20 to the air.
21 An example of air stripping is water is
22 forced down through the column. Air blows the
23 water and volatilizes the contaminants. The water
24 is released at the bottom of the tower, and the
25 air is released through the top of the tower,

1 either for further treatment or is just released.
2 The EPA prefers this alternative for the
3 following reasons: It is protective of human
4 health and the environment. It does provide
5 reliable protection over time, with minimal risk.
6 It ensures contamination does not migrate
7 off-site, and will minimize further contamination
8 of the Memphis Sands.
9 It does utilize a permanent solution.
10 Its uses are proven and widely available
11 technologies. It does reduce toxicity, mobility,
12 and volume of the contaminated soil and
13 groundwater, and it is cost effective. Lastly, it
14 satisfies the EPA's preference for treatment as a
15 principal element.
16 Where do we go from here. The next
17 step. The public comment period began on April
18 21st, and will end on May 21st, unless an
19 extension is requested for another thirty days.
20 During the next few months the EPA will respond to
21 the comments received and the responses will be
22 summarized in a document called the Responsiveness
23 Summary.
24 The EPA's final choice will be documented
25 in the Record of Decision, and is anticipated to

1 be issued in August of 1992. The ROD, which
2 includes the Responsiveness Summary, will become
3 part of the Administrative Record, which is
4 located here in the library.
5 After the Record of Decision is signed,
6 and the Remedial Design and the Remedial Action,
7 we will begin negotiating with Carrier Air
8 Conditioning, and those should be completed by
9 November of 1993. We anticipate to begin the
10 Remedial Action in November of 1993. We estimate
11 the time to remediate the soils will be three to
12 five years, and the time required to remediate the
13 ground water will be less than thirty years.
14 Also, in your handout we have also put my
15 name, Suzanne's, and Jordan English, if you have
16 any questions. At this time I will turn it over
17 to Suzanne.
18 MS. DURHAM: Good evening. My name
19 is Suzanne Durham. I am just going to reiterate
20 some of the things that Beth and Harold have
21 already told you. We are here tonight to explain
22 our long-term Remedial Investigation, and to offer
23 a proposal for cleanup of the Carrier Air
24 Conditioning Site.
25 Choosing the final response action is

1 probably the most important decision ever made in
2 the Superfund Site, and when we get to this point
3 in the process, we strongly encourage the citizens
4 who are most effected by the Site to be a part of
5 that decision-making process.
6 We have recently issued the Proposed Plan
7 Fact Sheet, which summarizes the findings of our
8 Remedial Investigation and Feasibility Study. We
9 also sent the Administrative Record to the
10 library, to the information repository here in
11 this library. I hope that you have all had a
12 chance to study that Proposed Plan Fact Sheet and
13 to look at the Administrative Record. If you have
14 not had an opportunity yet, please do so. Ask us
15 questions tonight about our presentation, and then
16 submit your written comments to the Agency.
17 The comment period began April 21, and
18 extends through May 21, 1992. We can grant an
19 extension if you need additional time to prepare
20 your comments. After the comment period ends, the
21 EPA will prepare a document called the
22 Responsiveness Summary, which will summarize your
23 comments and our responses to your comments.
24 After that document has been prepared,
25 our regional administrator will sign the Record of

1 Decision, and both of those documents will be
2 available to the public in the Administrative
3 Record here in the library. We will issue a
4 notice in your local newspaper letting you know
5 what our final decision is.
6 An excellent opportunity for community
7 involvement is through our Technical Assistance
8 Grant, or the TAG Program. Congress recognized
9 that our documents are quite lengthy and highly
10 technical in nature. We can now offer a grant in
11 the amount of fifty thousand dollars to a
12 community group who is interested in hiring your
13 own technical advisor to interpret the data that
14 we generate. There is a fact sheet on the
15 registration table if anybody is interested in
16 that.
17 In summary, the goal of the Community
18 Relations Program is to keep you informed and
19 involved about complex decisions which will affect
20 you here in the community. Beth and I are your
21 two main contacts at the EPA. You have our names,
22 addresses, and phone numbers in your fact sheets.
23 Don't hesitate to call either one of us at any
24 time.
25 Now I think we are going to go right on

1 into the question and answer period.

2 MR. TAYLOR: All right. Again, I

3 will leave this on, because we might need it. We

4 are going to be here until hopefully we answer

5 your questions or at least know what they are so

6 that we can get back with you.

7 Since we do have a court reporter here

8 tonight, and we are trying to get a record of the

9 meeting, what I am going to do is ask you to

10 stand, or at least project your question enough so

11 everyone can hear and so she can get a good record

12 of it.

13 Also, I would ask you to state your name,

14 and if you have a name that is difficult to spell,

15 I would ask you to spell your last name the first

16 time you ask a question, so we know who asked the

17 question.

18 If you direct your question to me, then I

19 will try to address it, and if I can't, I will get

20 some of my cohorts here to pipe in and finish it

21 up. So do we have any questions?

22 Yes, ma'am, in the back. Your name,

23 please.

24 MS. JOHNSTON: Melanie Johnston.

25 MR. TAYLOR: Go ahead.

1 MS. JOHNSTON: I would just like to
2 know if trichloroethylene is still being used at
3 the Site.
4 MR. TAYLOR: No, ma'am. It has been
5 discontinued in the manufacturing process.
6 MS. JOHNSTON: Oh, it has. Great.
7 MR. TAYLOR: Yes, ma'am?
8 MS. FONTAINE: Daisy Fontaine, from
9 the Collierville Herald. My question addresses
10 the toxicity of any remaining substances in the
11 Collierville system.
12 MR. TAYLOR: Okay. I will probably
13 let Glenn Adams handle that a little bit. Right
14 now, you know, it -- let me see if I can explain
15 it. Let me just get the slide right here.
16 MR. JORDAN: Could you repeat the
17 question?
18 MR. TAYLOR: Okay. Yes. Go ahead.
19 MS. FONTAINE: I just asked a
20 general question on the toxicity remaining in the
21 aquifers, for both the shallow and the Memphis
22 Sands, and if anything is continuing to go in the
23 Memphis Sands. That would have been a better
24 question.
25 MR. TAYLOR: If you can see, we

1 have -- this is the manufacturing plant. This,
2 which is, again, hard to see. This is the City of
3 Collierville well. These are the two main areas
4 that releases have occurred. Those releases have
5 occurred, you know, back years ago, in 1979 and
6 1985, I believe.
7 Our sampling, on the surface of the Site,
8 we really didn't find any surface soils of any
9 concern. On the sampling in the creek, we didn't
10 find any surface water or sediment of concern.
11 The concern really is as the contaminants flow
12 along this shallow aquifer and then are released
13 to the Memphis Sands and then flow back towards
14 this withdraw well. As they do, of course, the
15 contaminants that are fairly high in concentration
16 here get diluted, and as they move here they
17 become lesser and lesser concentrations.
18 Then when they are pumped to this well,
19 those contaminants are stripped off using the air
20 stripping, and the public water supply itself is
21 currently okay, safe, not contaminated with TCE.
22 So the real threat that we are addressing with the
23 Remedial Action would be if this well would no
24 longer have the air stripper or if someone were to
25 stick a well in here and start using this water.

1 So we are really addressing not really a
2 current threat so much as we are a potential
3 future threat.
4 Glenn, do you have anything to add to
5 that?
6 MR. ADAMS: I think Harold has
7 probably answered your question, but what we
8 did -- you will have to excuse my voice. I am
9 trying to get over some sinus problems.
10 As we looked at, as Harold said, the
11 shallow soils, where most of these chemicals are
12 very mobile in the soils, so they don't stay
13 around the top very long. They leach with the
14 rainwater down into the groundwater. We looked at
15 the soils.
16 We looked at the current exposures to the
17 workers on the Site, and future exposures, of
18 course, to workers, and if some day these
19 buildings were to be gone, if someone would build
20 a residence on that. The soils came out to be
21 negligible and in the risk area. The groundwater
22 is the significant problem here.
23 The reason why we want to do something
24 with the soils is because of the contaminating
25 groundwater. Not from the risk of humans being

exposed to the soils. The groundwater does present an unacceptable risk for future use.

Right now there is no current risk to the groundwater on that side of the Site. The only current risk is with this municipal well, which with the air stripper, everything is below the detection limit. In other words, we cannot detect any chemicals in the water that is going into the system.

MR. TAYLOR: Yes, sir? Did you have a question?

MR. LACHAPELLE: My name is Norman Lachapelle, L-A-C-H-A-P-E-L-L-E. I just want a further clarification on your clay bearing formation, your Jackson Clay. Is that a pretty good, prominent layer of clay for the Site?

MR. TAYLOR: I may ask Lee Thomas, our hydrologist, to sort of describe the clay. I think this is a pretty good depiction of the clay underneath the Site.

MR. LACHAPELLE: Okay. I am hearing that you have not found any TCE contamination in the groundwater as of now.

MR. TAYLOR: No, sir. There is TCE in the groundwater right now.

1 MR. LACHAPELLE: How far down?
2 MR. TAYLOR: What is this depth? I
3 may get Lee to sort of help me here.
4 MS. BROWN: I think it is about
5 sixty or seventy feet.
6 MR. TAYLOR: Sixty or seventy feet.
7 MR. THOMAS: Sixty or seventy feet,
8 yes. Do you want me to take over?
9 MR. TAYLOR: Yes. Go ahead.
10 MR. THOMAS: Basically, what has
11 happened, as Harold has pointed out, the
12 contamination from the soils has moved down. It
13 has hit the top of the clay, and then it moves
14 along the top of the clay to the place where the
15 clay pinches out, and at that point then it enters
16 the drinking water aquifer, which is the Memphis
17 Sands.
18 MR. LACHAPELLE: It has not done
19 this yet?
20 MR. THOMAS: There is some
21 contamination.
22 MR. LACHAPELLE: I hear yes, and I
23 hear no.
24 MR. THOMAS: There is some
25 contamination right at the very top portion of the

1 Memphis Sands. That is correct. We do have one
2 deep well that goes down in the Memphis Sands
3 where we do have some contamination that has moved
4 off the top of the clay. So the clay is not a
5 confining zone. It is continuous across the
6 Site. It does pinch out.
7 That is one of the things that we are
8 concerned about, and the reason why we are going
9 to have additional extraction wells to prevent
10 additional contamination from moving off the clay
11 and endangering the Memphis Sands. Also, to clean
12 up the contamination that is already in the
13 Memphis Sands.
14 So that the issue about the contamination
15 of the drinking water aquifer, the future
16 contamination, as well as the existing
17 contamination, will be addressed with a selected
18 alternative.
19 MR. LACHAPELLE: So the Memphis
20 Sands are about three hundred feet?
21 MR. THOMAS: Right, but the
22 contaminations in the Memphis Sands is just where
23 it has flowed off the edge of the clay layer and
24 into the upper portions of the Memphis Sands.
25 MR. LACHAPELLE: Okay. Thank you.

1 MR. TAYLOR: I think perhaps the
2 confusion was we are saying that once this water
3 is pumped up and treated and distributed to the
4 public water supply, there is no TCE in the water
5 at that point.
6 MR. LACHAPELLE: My major concern is
7 the TCE getting in contact with our Memphis
8 aquifer. That is the major concern.
9 MR. TAYLOR: That is what this
10 remedy is going to address, yes, sir.
11 MR. LACHAPELLE: Thank you.
12 MR. TAYLOR: We traveled all the way
13 from Atlanta to come here, so surely there is more
14 than just a couple of questions. Yes, sir?
15 MR. YEGANEH: My name is John
16 Yeganeh. That is, Y-E-G-A-N-E-H. I would like to
17 know the difference between Option 4A and Option
18 4B, and why do you then choose 4B, or why do you
19 choose 4A against 4B.
20 I also have a second question. You are
21 mentioning here that you will adopt some air
22 pollution control, like an incinerator or carbon
23 adsorption. If your monitoring shows that you are
24 over the standards, the Air Quality Standards, are
25 you meaning the National Ambient Air Quality

1 Standards, or what do you mean by Air Quality
2 Standards here?
3 MR. TAYLOR: Well, we will have to
4 meet -- to answer your last question, we will have
5 to meet whatever standards apply to the Site.
6 Under Superfund, we won't necessarily have to get
7 a permit, but we will have to meet the
8 administrative --
9 MR. YEGANEH: What is the standard,
10 is what I am asking here. What is the standard
11 you are mentioning here?
12 MR. TAYLOR: Well, are you in the
13 Air Program?
14 MR. YEGANEH: I am in the Air
15 Program, yes, sir.
16 MR. TAYLOR: What standards would
17 apply to the plant or to any site, any rules of --
18 MR. YEGANEH: There is some National
19 Ambient Air Quality Standards for the ozone, which
20 TCE can affect the ozone. Are you talking about
21 the ozone National Ambient Air Quality Standard
22 here? That is what I would like to know.
23 MS. BROWN: This is a non attainment
24 area for ozone.
25 MR. YEGANEH: That's true.

1 MS. BROWN: We will meet those
2 requirements.
3 MR. YEGANEH: So you are not saying
4 that you are going to have a carbon adsorption or
5 or fume incineration right now. You are waiting
6 to see if you exceed the standards?
7 MS. BROWN: We don't know right now.
8 At this point in time, with the current systems in
9 place, the soil vapor extraction at the lagoon
10 area, and the air stripper, right now the
11 monitoring indicates we have no emissions over
12 those standards.
13 Now, when we put in the rest of our
14 systems, we have not done the designs yet. The
15 designs will give us the information we need to
16 know about what type of system we need on there.
17 We will design to meet those standards.
18 MR. YEGANEH: Okay.
19 MR. TAYLOR: Those questions will be
20 answered in the Remedial Design.
21 MR. YEGANEH: Could you answer my
22 first question, which was the difference between
23 Option 4A and 4B, and why did you choose 4A.
24 MS. BROWN: I would be glad to.
25 Basically, we chose 4A over 4B because air

1 stripping is a more proven technology. There are
2 associated problems with UV oxidation in that you
3 have bulb burnout, bulb replacement. The
4 monitoring is much -- you have to maintain
5 monitoring much more stringently than you do with
6 the air stripping.
7 MR. TAYLOR: Plus, you know, because
8 this is going to be a pump and treat system, we
9 may be false pumping. We may be doing a lot of
10 things to refine the system. With the UV lights,
11 it is more adaptable, in my opinion, anyway, to a
12 constant flow type process where you know
13 day-to-day what your flow in and flow out is going
14 to be.
15 In my experience, the air stripping is
16 just a lot simpler and easier and it meets the
17 same goals. The price is not that much
18 different. It is just the implementability of the
19 system, I guess.
20 MR. YEGANEH: What were the prices
21 for 4A and 4B, would you, please?
22 MS. BROWN: Sure. 4A was five point
23 seven to seven point nine million, and 4B is six
24 point one to eight point four.
25 MR. YEGANEH: Six point one?

1 MS. BROWN: Yes. In the proposed
2 plan, I believe, if you look, there is an
3 evaluation table that basically explains the
4 differences between the two. Also, a pilot study
5 would have to be done for UV oxidation.
6 MR. YEGANEH: Thank you.
7 MR. TAYLOR: Are there any other
8 questions?
9 MR. LACHAPELLE: Yes, I have one
10 more.
11 MR. TAYLOR: Yes, sir.
12 MR. LACHAPELLE: Norman Lachapelle
13 again. The well on the screen, has that been
14 secured? Is that a City groundwater well?
15 MS. BROWN: I am sorry? Has it
16 been --
17 MR. LACHAPELLE: Has the well been
18 secured? I mean, is it in operation?
19 MS. BROWN: Yes.
20 MR. LACHAPELLE: Does it have any
21 trace of TCE?
22 MS. BROWN: After treatment, no.
23 MR. LACHAPELLE: After treatment,
24 but it has before treatment?
25 MS. BROWN: That is correct.

1 MR. LACHAPELLE: Who is checking --
2 who is doing the testing? The City?
3 MS. BROWN: Both the City and
4 Carrier's contractor, En Safe, with the EPA's
5 oversight.
6 MR. LACHAPELLE: Thank you.
7 MR. TAYLOR: So what we will do in
8 the future, as far as with the Remedial Design or
9 Remedial Action, we will continue that, formalize
10 all those requirements in a consent decree, which
11 will be lodged in a Federal District Court just to
12 make sure everything is being done properly and
13 there will be -- if things are not done properly,
14 there will be stipulated penalties and et cetera,
15 et cetera.
16 It sort of is -- the way I see it, a lot
17 of this is being done right now, but we are going
18 to sort of codify that to make sure it continues
19 in the future and that we have a mechanism to
20 control it.
21 MR. LACHAPELLE: Is that the only
22 City well contaminated?
23 MR. TAYLOR: There are actually two
24 wells.
25 MS. BROWN: At this plant, this is

1 the only plant that has shown contamination. The
2 other two plants have not.
3 MR. LACHAPELLE: Good.
4 MR. TAYLOR: If there aren't any
5 other questions, we will be around if you want to
6 come up and talk to us individually. Again, we
7 appreciate everyone coming out tonight. We do
8 have the Administrative Record just next door in
9 the library. We will welcome everyone to come
10 look at it. We welcome everybody to look at the
11 proposed plan and send any written comments that
12 you may have, and to give to Suzanne or Beth or I
13 a call at work.
14 Again, we will be around for a few
15 minutes. If you want to come up and talk to us,
16 we will be glad to talk to you then. Again, we
17 appreciate you coming out tonight. Thank you.
18 (Whereupon, said proceedings
19 concluded at approximately 8:00 p.m.)
20
21
22
23
24
25

1 AMENDMENT SHEET

2

3 I, the undersigned, BETH BROWN, do hereby certify that I have read the foregoing proceedings
4 and that, to the best of my knowledge, said proceedings are true and accurate with the
5 exception of the following corrections listed below:
6 PAGE / LINE /

7 _____
8 _____
9 _____
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16 _____
17 _____
18 _____
19 _____
20 _____

21 _____ _____
Date Signature of Witness

22 Sworn to and Subscribed before me,
this ____ day of _____, 1992.
23

24 _____ _____
Notary Public My commission expires

25

1 COURT REPORTER'S CERTIFICATE

2 STATE OF TENNESSEE:

3 COUNTY OF SHELBY:

4 I, DARLENE M. SULLIVAN, Court Reporter
5 and Notary Public, Shelby County, Tennessee,
6 CERTIFY:

7 1. The foregoing proceedings were taken
8 before me at the time and place stated in the
9 foregoing styled cause with the appearances as
10 noted;

11 2. Being a Court Reporter, I then
12 reported the proceedings in Shorthand to the best
13 of my skill and ability, and the foregoing pages
14 contain a full, true and correct transcript of my
15 said Shorthand notes then and there taken;

16 3. I am not in the employ of and am not
17 related to any of the parties or their counsel,
18 and I have no interest in the matter involved.

19 WITNESS MY SIGNATURE, this, the 22nd day
20 of May, 1992.

21

22 Darlene M. Sullivan
DARLENE M. SULLIVAN
23 Court Reporter
Notary Public
24 for Shelby County, Tennessee

25 My commission expires: February 8, 1994