Department of Health and Human Services
Centers for Disease Control and Prevention
Agency for Toxic Substances and Disease Registry

February 3, 2004
Oak Ridge Reservation Health Effects Subcommittee Meeting
Summary Report

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Summary Report

The eighteenth meeting of the Oak Ridge Reservation Health Effects Subcommittee (ORRHES) was convened at 12:15 pm Eastern Standard Time on Tuesday, February 3, 2004, at the Kingston Community Center, in Kingston, Tennessee.

Present were: ORRHES Members: Peggy Adkins, W. Donald Box, Herman Cember , Bob Craig, Kowetha Davidson (Chair), Karen Galloway, George Gartseff, Jeffrey Hill, Marilyn Horton-Palmer, David H. Johnson, James F. Lewis, Anthony Malinauskas, LC Manley, Donna Mosby, Charles Washington, Sr. ORRHES Liaison Representatives: Chudi Nwangwa (TDEC), Brenda Vowell (TDH). ATSDR Representatives: Shuba Chandar (Fellow), Paul Charp, Burt Cooper, Melissa Fish (ORISE Fellow), Jack Hanley, Marilyn Horton, Michael Hatcher, Elizabeth Howze, Sandra Isaacs, Theresa Nesmith, Jerry Pereira, Susan Robinson, Lorine Spencer (ATSDR/ORRHES DFO), Terrie Sterling, William Taylor. Guests: Gordon Blaylock, Deborah Kirkland, Lucille Johnson, Timothy Joseph, Anne Pickering, Teresa Robinson (Cambridge Communications), Lynne Smith, Janice Johnson Stokes.

Call to Order/Opening Remarks, Agenda Review
Approval of December Minutes, Introductions, and Correspondence

Kowetha Davidson, Chair
Oak Ridge Reservation Health Effects Subcommittee (ORRHES)

Ms. Kowetha Davidson called the meeting to order and welcomed everyone to Kingston and to the Kingston Community Center. Following several housekeeping announcements, Ms. Davidson briefly reviewed the agenda and made several changes in the order of the day's events so that the Public Comment Period would take place as advertised and on time. She then opened the floor for discussion regarding the subcommittee's December meeting minutes.

Discussion Points:

- Mr. James Lewis indicated that the December meeting minutes seemed to be more of a verbatim-type transcript and he had heard some people say that such a structure was quite meaningful. He suggested that the Agency for Toxic Substances and Disease Registry

(ATSDR) consider more of a verbatim style for the ORRHES meeting minutes, because such minutes had been quite worthwhile for the December discussion. Also, he had heard some say that the abbreviated or summary minutes felt somewhat sanitized because certain comments had been omitted. Mr. Lewis stated that the subcommittee should reconsider whether they would like to continue to have summary minutes or whether they would prefer to have verbatim minutes, which are similar to the Public Health Assessment Work Group (PHAWG) meeting minutes.

- Ms. Davidson pointed out that during an earlier meeting, the subcommittee voted that they wanted detailed summary reports as opposed to verbatim transcripts of the meetings.

- Mr. Lewis indicated the PHAWG had a similar discussion, but that after the work group had perused both products, they decided that they appreciated the verbatim style. He pointed out that the minutes did not have to be complete verbatim transcripts, but might include, for example, verbatim during critical or technical discussions that may have a major impact, such as discussions regarding White Oak Creek or Y-12. These key discussions are important and should be more detailed. He urged the subcommittee to think about this idea for the future.

- Mr. Jeffrey Hill asked Mr. Lewis if he was making a recommendation or a formal motion.

- Mr. Lewis said he thought it would be nice if the subcommittee followed up on the idea. Again, a verbatim would not be necessary for everything that the subcommittee discussed, but it would be important for critical or technical discussions, so that the subcommittee would have a stronger document upon which to support its position.

- Mr. Hill asked Mr. Lewis how the subcommittee might determine when they wanted a verbatim transcript versus a summary.

- Mr. Lewis responded that the subcommittee could follow the PHAWG's current process. When the work group approaches more difficult issues, such as highly technical presentations, those issues are flagged in advance, so that the writer/editor will capture the deliberations regarding issues that the public may have difficulty understanding. He stressed that he was not suggesting a verbatim for every miscellaneous issue that the subcommittee discusses, but when the group is dealing with issues as important as White Oak Creek or Y-12, he thought it was important to document the discussion at least to a level of detail similar to that in the PHAWG.

- Ms. Davidson asked the group how many people actually read through the minutes. A show of hands indicated that everyone reads the minutes. She suggested that the group think about this topic for later discussion. However, it was her opinion that if the group switched back and forth from a summary to a verbatim in the same document, it might cause difficulties for the writer/editor. She suggested that the group should make a decision as to what type of minutes, either verbatim or detailed summary, they would like and leave it at that.

Hearing no further discussion, Ms. Davidson asked for a motion to approve December's meeting minutes.

Motion

Mr. Bob Craig moved to approve the December minutes. Mr. Charles Washington seconded the motion. The motion carried.

Ms. Davidson then requested that all meeting attendees introduce themselves for the record [those who were present are delineated at the beginning of this document]. Following the introductions, Ms. Davidson asked the ORRHES members from Roane County if they would like to extend a welcome to the group.

Discussion Points:

- As a resident of Kingston, Mr. Tony Malinauskas welcomed everyone to Kingston.
- As residents of Roane County, Mr. Hill and Mr. Lewis welcomed everyone to Roane County.

Ms. Davidson then requested that Ms. Spencer review the status of the subcommittee's action items.

Status of Action Items

Ms. Lorine Spencer
Executive Secretary and Designated Federal Official (DFO)
Oak Ridge Reservation Health Effects Subcommittee (ORRHES)

Before briefing the group on the status of the subcommittee's action items, Ms. Lorine Spencer reminded subcommittee members to turn in their applications to reapply for ORRHES membership by the end of this meeting, if they had not yet done so.

Ms. Spencer then referred attendees to Tab #4 in their binders, to the Action Item list. She indicated that the list was color coded, with the gray items being completed action items, the yellow items being pending action items, and the blue being ongoing action items.

Ms. Spencer discussed the following current pending action items:

- *The Division of Health Education and Promotion (DHEP) will return in the future to discuss the Phase II work of the Needs Assessment.* Ms. Spencer pointed out that representatives of the DHEP were present during this meeting to discuss their continuing plans. This item was expected to become a "Continuing Action Item" soon.
- *ATSDR, in collaboration with ORRHES, develop an issue-based, cross-referenced index of key issues, based on the various agendas from meetings, to be placed on the website.* This task is something that ATSDR is currently undertaking. There is a plan and there is some

expertise within the DHEP with whom ORRHES will be working. The plan is to examine the website and develop ideas to submit to the Communications and Outreach Work Group (COWG) or any of the other appropriate work groups for feedback.

- *ATSDR was to clarify with Dr. Tim Joseph the suggestion to update the compendium of all health-related research studies at Oak Ridge. Mr. Jack Hanley was to discuss this issue with Dr. Joseph.* Ms. Spencer indicated that this task had not yet been accomplished, but she planned to talk with Dr. Joseph about this action item before he left this meeting.

- *Mr. Jerry Pereira was to distribute the Public Health Assessment (PHA) Guidance Manual to ORRHES after the document is approved for release.* Ms. Spencer stated that this document was still awaiting approval by administration. As soon as the document was approved, it would be distributed to ORRHES members.

Discussion Points:

- Ms. Adkins asked if all five vacancies on the subcommittee would be filled.

- Ms. Spencer replied that she did not know at this time. Staff assembles the application packets, but they do not have any control over who is selected to serve on the subcommittee. Those packets are submitted to Dr. Gerberding's office. Dr. Gerberding is the Director of the Centers for Disease Control and Prevention (CDC) and ATSDR. The packet then goes to Washington to the Secretary of the Department of Health and Human Services (DHHS). At that level, it is unclear what happens to the packets, but the administration will let staff know who is and is not approved to be on the subcommittee. Certainly, ATSDR makes strong justifications for the people who are submitted, but the actual selection decision for membership to the subcommittee is made at a higher level.

- Mr. Lewis asked if Ms. Spencer was talking about the final decision to bless the ones that ATSDR has picked. He reminded Ms. Spencer that the subcommittee had some concerns with maintaining a diverse panel and asked if ATSDR would be able to make the final selections based on the identification of any weaknesses in some of the open positions, or if that would be left up to senior management.

- Ms. Spencer responded that ATSDR has recruited people as best they could to fill the subcommittee positions. For example, an application has been received from a physician, which was one of the subcommittee's concerns. Staff submits the applications received and makes strong justifications for approving the applicants submitted. They also make the decision about whom they send forward to Washington. She indicated that, at this point, all of the applications received looked as if they would qualify for committee membership, but stressed that the final decision is made at a higher level.

- Mr. Jerry Pereira added that he was quite concerned about some talk he was hearing about Washington's playing hardball with renewing people, and he was afraid that there was going to have to be some strong, hard decisions made by the agency, certainly above his level, with regard to ORRHES membership. They may ask for his recommendation or they may not, but depending on what they do regarding the sitting members here and how much time

is left to complete this subcommittee's goals, he is quite concerned. He stated that he could not fathom attempting to bring a whole new set of people up to speed regarding the ground that the ORRHES has covered and considering what ground there was left to be covered. He was optimistic that they would get the membership through, but he has seen things happen in other subcommittees that did not look good.

Project Management Status Update

Mr. Jerry Pereira
Agency for Toxic Substances and Disease Registry (ATSDR)

Mr. Pereira stated that nothing had changed tremendously since his last report regarding the contaminants. In terms of dates, it was his understanding from a reliable source that, by the next ORRHES meeting, the Iodine PHA would be on track. The groundwater issue also would be on track. Mr. Pereira indicated that the entire package of all PHAs due was still within the guidelines and total timeframe.

The main point Mr. Pereira said he wanted to raise related to the budget. He directed the subcommittee's attention to Dr. Mark Bashor's letter, on the bottom of page one, where a chart showed that ATSDR's budget from 1999 to 2003 has been steadily decreasing. As of January 22, 2004, the omnibus budget was passed. Within that budget are the funds for all of the Federal Advisory Committee Act (FACA) charters. Within those funds, there are some earmarked monies for NIOSH and for the University of Nevada, Las Vegas (UNLV), which will have to be used for specific items. Mr. Pereira said he believed that the amount was approximately $7.2 million to NIOSH and $4 million to UNLV. He indicated that ATSDR was anticipating an additional cut, but he did not know what kind of impact the cut would have on the agency or on the ORRHES.

Mr. Pereira assured those present that if he found out something was going to impact the ORRHES immediately, he would meet with the senior management of ATSDR and with Dr. Davidson. He said that if Dr. Davidson did not hear from him between this meeting and April, he would report again on this issue during the April meeting. If something did arise that he felt needed the immediate attention of the senior staff at ATSDR, the ORRHES Chair, and the Work Group Chairs, then he would convene a special meeting to discuss the issue.

Discussion Points:

- Mr. Washington suggested that the decreasing budget might be included as part of the justification for maintaining the core group of the ORRHES. The justification should include budget concerns, legacy knowledge, cohesiveness of the group, and the critical timeline for completing their report.

- Mr. Pereira responded that all of those items would be included in the justification of everyone who wishes to reapply. Even if they chose not to allow everybody to remain on the committee, there is a six-month grace period from the actual termination date, during which a person would still be allowed to keep their seat on the ORRHES, as long as that seat

was not replaced. In other words, if someone was not approved to return to the ORRHES, ATSDR could keep the member on the subcommittee for another six months, in order to complete projects. That is the worst-case scenario. The best-case scenario is to have everyone approved by Washington.

- Mr. Lewis asked if there was a target date for when the issue-based, cross-referenced index of key issues project might be completed and when that index would be placed on the website.

- Ms. Spencer replied that they were hoping to have the index up by April 2004 for testing purposes. She and Ms. Susan Robinson have not had time to pull that project together, but that was next on her agenda following this meeting. Ms. Spencer said she did have some community members come into the office, use the website, and download the application for the ORRHES from the website. Most of them found it relatively simple to use. More usability testing is planned.

- Dr. Davidson asked what the timeline was for submitting the ORRHES membership applications to ATSDR, or if there was a deadline for submitting them to Washington.

- Ms. Spencer responded that they had to have the package to Committee Management no later than June 2004, at which time Committee Management would submit the packet to Washington.

- Mr. Donald Box asked if Ms. Spencer knew if anyone on the present committee was not planning to reapply.

- Ms. Spencer responded that everyone had been given until the end of this meeting. She said she had received almost everyone's applications, and she knew that some people probably had their applications with them to submit. Her understanding was that most of the members were reapplying.

- Dr. Davidson pointed out that the subcommittee's project plan outlines a great deal of work ahead in 2004. She stressed that it was important for everyone to remain focused on their specific tasks and not become too distracted by other things, because otherwise they would not be able to complete all of their tasks. Also, if there are budget cuts, then members will need to become more efficient, because they will still have to do the same amount of work with, perhaps, less money.

Hearing no further discussion, Dr. Davidson asked the group to welcome the ATSDR/DHEP staff members who would be presenting a response to the ORRHES's recommendations to ATSDR regarding the needs assessment document. She reminded the subcommittee that, following the presentation, the Needs Assessment Work Group (NAWG) would deliver its report, because they would be presenting a recommendation to the ORRHES. The subcommittee would not take a vote on that recommendation until after everyone had a chance to familiarize themselves with the topic and recommendation. The other work group reports were to be held until later in the meeting, after further presentations.

ATSDR's Response to Recommendations from the ORRHES Regarding the Needs Assessment Document

Dr. Terrie Sterling
DHEP/ATSDR

Dr. Terrie Sterling directed the group's attention to both her slide presentation and the written handout provided on ATSDR's response to the ORRHES's recommendations regarding the needs assessment document. She requested that those who did not have the documents let staff know. She indicated that on May 31, 2003, the DHEP/ATSDR submitted a draft report entitled, "Assessing the Health Education Needs of Residents in the Area of Oak Ridge Reservation, Tennessee—Final Report, May 23, 2003." This report was prepared by the George Washington University Medical Center. Members of the ORRHES, as well as the broader Oak Ridge Reservation community and surrounding area, conducted a thorough and extensive review of this report and developed conclusions regarding the report. During the ORRHES meeting on August 26, 2003, the NAWG made three recommendations that were voted on and passed by the ORRHES. What follows is the ATSDR's response to each recommendation:

1. *The ORRHES recommended that the report should not be used as the basis for any future public health education program to be conducted in the Oak Ridge Reservation Region.*

   DHEP/ATSDR agrees with this recommendation. This report will not be used as a basis for any health education or health promotion effort. However, the agency reserves the option of using portions of the report that it considers to be methodologically sound and potentially helpful in understanding the ORR community. For example, some information gathered from the key resource interviews may be useful, such as the finding that most health officials, community leaders, and community members often find out about residents' health concerns through public meetings. Another example, despite concerns with the telephone survey, is the finding that heart disease was a key concern that individuals had for themselves. This may be an issue that warrants further explanation and, if important to the community, DHEP could assure the information is communicated to the appropriate health resources.

2. *The ORRHES recommended that future ATSDR/PHEP activities related to PHA be based upon the findings of the public health assessment program which should, with the advice of the ORRHES, ascertain the following:*

   a. *The degree to which releases of containments from the DOE sites contributed to regional public health problems.*

   b. *The degree to which there is a need for additional public health educational services.*

   c. *The degree to which the existing public health and medical services establishment can supply any substantive unmet public health education needs in both the rural and urban areas.*

d. The degree to which ATSDR might meet any additional needs by augmenting the current system by printed material or presentations by experts. Not to do this will very probably result in the duplication of much effort as well as be an affront to the existing health care system.

e. The degree to which any necessary educational effort can avoid the onus of distrust that has cursed all previous efforts.

The DHEP/ATSDR agrees that any planned health education effort for the Oak Ridge Reservation (ORR) community should include activities related to the findings of the PHAs, whether or not it is determined that releases of contaminants from the DOE sites occurred at sufficient levels to cause health effects. DHEP intends to work with Division of Health Assessment and Consultation (DHAC) staff from the beginning of the PHA process, so that education and communication can be an ongoing process.

The DHEP/ATSDR approaches difficult public health problems through the application of various strategies, including community and professional education, communication, and building supportive environments. The DHEP/ATSDR will use information about the ORR community that is presented in the PHAs as well as from other sources for health education planning. Health education and promotion efforts may also address questions that are not directly related to the PHA, but which are of concern to community members. Strategies may focus on health care providers who often have no training in taking an exposure history or counseling patients about hazardous substances. Education strategies may need to be tailored so as to be appropriate for specific audiences and community settings.

Finally, the DHEP/ATSDR knows that trust forms the basis of any successful partnership. Throughout all activities and interactions with the NAWG, ORRHES, and the ORR community, the DHEP/ATSDR will conduct business with this principle in mind and will work to engage all participants, inviting and accepting community input and involvement in the agency's efforts to build trust as a foundation for all educational efforts.

3. The ORRHES recommended that ATSDR examine the project structural and management components, which enabled the report and project to reach this state without ATSDR overview and without subcommittee or working group review that could have remedied its shortcomings.

The DHEP agrees with this recommendation and is currently reviewing its processes for managing and providing oversight to contractors and subcontractors. The DHEP has determined that subcontracting for a health education needs assessment (as was done with GWU) is not the most efficient or effective process for obtaining the desired product. The DHEP is unlikely to do so in the future unless clear operating procedures are in place and agreed to by the contractor, permitting a step-wise review and approval of the subcontractor's approach and work products.

In future health education and promotion efforts for the ORR community, DHEP will seek closer working relationships with, and involvement of, the NAWG and the ORRHES. DHEP

will work with the NAWG to establish effective mechanisms for clear communication to allow for the health education and promotion needs of the ORR community to be identified and addressed.

Discussion Points:

- Dr. Cember asked for clarification regarding the recommendation not to subcontract needs assessments. He asked to whom DHEP might allocate the responsibility for health education needs assessments.

- Ms. Sterling responded that the recommendation was that the DHEP review its processes, structure, and how it manages and conducts oversight of contracts. In the future, when the agency contracts directly or subcontracts with an organization, they will need to ensure that there are: clear oversight, deliverables, and processes in place to ensure that the work is done properly.

- Mr. David Johnson asked how the DHEP planned to maintain the level of trust required to maintain a successful partnership with the community, and what mechanisms they plan to use.

- Ms. Sterling said she was not sure that she could personally cite a particular mechanism. The DHEP plans to: be onsite more often; to stay in communication with ORRHES members; to make sure there is a clear way for people to be involved; to offer involvement and input; to allow for, whenever possible, activities that would build the capacity of the communities or neighborhoods with which the agency works. The DHEP plans to plug into the network that exists in communities that are trusted, to see if they will be willing to work with the DHEP. Ms. Sterling said she thought it was a matter of trying to be open, honest, and being there to listen and to respond.

- Mr. Johnson asked what mechanism the DHEP would be using with regard to conflict resolution, because the agency would sometimes encounter territorial mindsets in some communities. Also, some personalities take a governmental agency coming into their communities quite personally. He wondered how the agency would attempt to address those types of concerns.

- Ms. Sterling responded that the DHEP hoped that the community members working with them would help with those situations. She thought that it was really important to have community members accompanying the DHEP in every stage of their work.

- Dr. Cember pointed out that a study was conducted in large communities, in Eastern Pennsylvania. With regard to questions dealing with health effects from radiation and radioactivity, 90% of the people polled said that their main trust would come from physicians, nurses, and so forth. The other 10% said that their main trust came from the clergy. Dr. Cember suggested that if there were going to be any outreach and educational events, primary targets should be the healthcare community and then the clergy. Then the

education would filter down, hopefully, to the general population, since those are the people whom they trust the most.

- Mr. Lewis produced several overheads and asked if they could be projected on the screen. He asked if he could speak for a few moments on the subject of trust, indicating that he had developed different types of trust after having done some reading. Two of the types of trust discussed in the books he had read were trust in the federal government and social trust. Dr. Davidson asked if Mr. Lewis could wait until later to present his ideas because they did not directly tie in with the topic at hand. Mr. Lewis agreed to wait.

Oak Ridge Reservation Communication & Health Education Plan: White Oak Creek PHA Initial Plan

Mr. Jerry Pereira
DHAC/CIB/ATSDR

After sharing a map of the ORR community and an overview of his presentation, Mr. Pereira indicated that the White Oak Creek PHA Initial Plan, a plan to connect the ORR community to resources through outreach, communication, and education, was comprised of three phases: Red Cover, Brown Cover, and Blue Cover. The Red Cover Phase is data validation, which will involve limited distribution. The Brown Cover is the phase in which the ATSDR will ask for public comment. The Blue Cover is the final report.

Mr. Pereira explained that the emphasis of the communication/education activities would change depending upon the phase of the PHA and the specific needs of the community as it applies to the findings and what ATSDR has learned in that PHA. ATSDR does not believe that one-size-fits-all, and materials that might be appropriate the White Oak Creek Health Assessment (e.g., in terms of distribution of information, health education products, flyers, fact sheets, and brochures) may be totally different than those needed for Y-12, mercury, or one of the other contaminants. The agency must keep this in mind when working with the ORRHES and its work groups. ATSDR plans to tailor the products to the specific needs of each community. The ORR Communications and Health Education Plan's overall goals are to:

- Increase participation by ORRHES members and interested individuals in providing input on the PHA;
- Collect and address the community's needs and concerns related to the PHA and their health;
- Assist the ORR community in understanding the findings of the PHAs; and
- Build capacity within the ORR community to respond to issues related to release of the PHAs.

Mr. Pereira pointed out that there were several critical key words to be found in these goals. The first phrase of importance is "increased participation." Many people are concerned about community participation, not among the ORRHES members, but among people in the community. It is critical that the plan stimulates the interests and desires of the ORR community so that they become aware of the issues, participate in the process, and give the ORRHES and the agency feedback. To date, for whatever reason, this has not been done well.

Many theories exist as to the reasons why community involvement in this process is lacking. One theory is that the ORR community has been so saturated with information about the DOE and their facilities, that they just want to live their lies. These factors must be considered, but the key word is "increase." What methods can be used to increase the community's participation?

Regarding the second goal, the key words are "collect and address the community's needs." ATSDR and the ORRHES must be good listeners in order to discover what the real impact is to the community and what the community wants to know. If the community is given information that it members either already know or do not care to know, they will not pay attention. Again, one size does not fit all.

The third goal is critical. The agency and the ORRHES must help community members to understand the findings of the PHA, so that they can take ownership of it and, hopefully, embrace it. This is a difficult task because the PHAs are extremely technical and include a great deal of scientific notation that the general public typically will not understand. Even ORRHES members have indicated that sometimes, when items come up for a vote, they do not always understand what is being discussed. The ATSDR must make a commitment to explain the PHAs better, so that the public will understand them clearly. Ideally, the agency would like for the community to have ownership in the PHAs, but to ensure that the public takes ownership, they must be a part of the process.

The last goal is also critical because the agency realizes that people need to be given the tools with which to make personal life decisions based on results found in the PHAs: Do I move? Do I stay? Do I change my patterns of living, eating, fishing, and so forth? People are going to be making their own choices based on their understanding of the PHAs. Even if a PHA indicates that there is no public health hazard, that message has to be communicated in a way that people understand and believe. These goals sound quite nice, but in reality all of them are extremely difficult to accomplish for many reasons. Mr. Pereira indicated that Dr. Elizabeth Howze would be explaining how the DHEP proposed to accomplish some of these goals.

Discussion Points:

- Dr. Malinauskas stated that one of the primary goals of a PHA is to produce a document that is approximately ten pages long, with, perhaps, one hundred pages of appendices attached. If the agency releases a document that is forty or fifty pages long, the community is not even going to attempt to read it, much less understand it. He thought that the group should strive for brevity and that the document should be written in a language that the community would understand. He suggested that the appendices should be left to the technical people.

- Mr. Pereira concurred with Mr. Malinauskas and indicated that he had seen, in the past, a larger document for the technical people and a briefer version that gives details and refers people to the appendices for more technical information. He indicated that ATSDR strives for that type of document by developing fact sheets that explain the implications of the PHAs for the public.

- Mr. Lewis said he thought that sometimes the agency had a tendency to focus on technical individuals, but the ORRHES is made up of lay people as well as technical experts. As these PHAs are developed for the various contaminants of concern, many of the subcommittee members follow these issues via the PHA and find that sometimes not enough work has been done at the subcommittee level to even communicate the issues in a ten-page brief to the members of the subcommittee, who are also lay people. One subcommittee member has suggested releasing some sort of brief on the PHA. Mr. Lewis thought that the group should follow up on those types of suggestions as to how the group might create documents clear and concise enough for the general public and subcommittee members.

- Dr. Craig explained that at the last PHAWG meeting, Ms. Melissa Fish prepared a draft of her executive summary for the PHA. The summary is four pages long, two of which are large pictures. It is quite well done and fits the description of the type of document being discussed.

- Dr. Malinauskas stated that his point was that the PHAWG, or even the ORRHES as a whole, ought to be reviewing a ten-page document and not a fifty-page document.

- Dr. Davidson said she believed that this problem was arising because the public and the subcommittee are now being included at the Red Cover level. In the past, the ORRHES and the public have not been included at that level, and documents such as fact sheets were released at the Brown Cover level, with the public comment version. The Red Cover version was originally designed for technical people, but the subcommittee is now being involved in that process to allow members to review that particular version. She reminded the group that the document had to include technical aspects, because it went to the agencies for data validation, and in order to have data validation, all of the technical aspects have to be included in the document. She asked the ORRHES if they wanted to include another step earlier in this process, which would increase the levels, or if they wanted to wait until the public comment level. Dr. Davidson thought that the subcommittee included plenty of experts on the various issues, and if everyone would work together, she thought that they would be able to find a way to express themselves so that everyone would understand all of the particular issues.

- Dr. Tim Joseph said he would be pleased to address this issue if the subcommittee requested that of him.

- Dr. Howze suggested that she be allowed to continue with her part of the presentation, which might answer many of the subcommittee members' questions.

- Dr. Craig pointed out that it was the PHAWG's responsibility to conduct a line-by-line review of the seventy-page document and the hard technical work, not the job of the ORRHES. Then, when the document comes back to the ORRHES for comments, it is up to each individual member to look at it and make comments from their diverse points of view. Certainly, anyone on the ORRHES is welcomed to become involved in the PHAWG, but they are not required to do so.

Dr. Elizabeth Howze
DHEP/ATSDR

Dr. Libby Howze expressed her pleasure at being in Kingston, with the beautiful Clinch River right outside the door. She said that although the presentation she and Dr. Pereira were presenting during this meeting was being presented with a focus on White Oak Creek, the DHEP has developed a template for approaching the work in terms of communication and education, and the agency would welcome feedback at the end of the entire presentation on any of the processes presented. She also noted that what she was going to present might not have the level of specificity that the ORRHES might be looking for, but that was because of the current phase of the plan. Still, what is planned now is quite a workable outline and the details can be penciled in as additional data is obtained.

In *Speaking of Health, 2002,* the Institute of Medicine (IOM) stated that, "Effective communication is highly dependent upon the social and cultural milieu that shapes the individuals, families, and the communities that are the intended recipients." The DHEP agrees. Dr. Howze said that as she went through the rest of her presentation, she wanted the group to note how important the DHEP thinks it is to pay attention to different audiences in the eight counties included in the ORR community.

The audience groups and segments included in the plan include:

- ORRHES Members
- Interested Community Members
  - Technical and non-technical
  - Within specific PHA area—outside of PHA area
- Interested groups
  - Civic and environmental groups
  - Government agencies
  - Public health councils
  - Elected officials
- Health Care Providers
  - Hospitals, private practitioners
- Oak Ridge, Regional media

There may be other groups as well, but this is the initial list.

Dr. Howze illustrated the synergy that exists between the four general categories of communication and education: 1) Community Involvement and Outreach; 2) Community Assessment in the ORR area; 3) Communication: Awareness and Understanding, which includes whether people are even aware of what is going on in terms of a particular PHA. Or, if they are aware that it is going on, whether they understand the meaning of the results and what those results infer in terms of their actions or behavior; and 4) Health Education: Knowledge and Skills.

Dr. Howze reminded the attendees that Mr. Pereira had mentioned knowledge, skills, and what people might want to do differently as a result of a PHA. They could be thinking about that in terms of their own individual or family behavior, but they could also be thinking about it at the community level. One of the things that Dr. Howze noticed when reading the White Oak Creek PHA draft was that at some point in the past, a policy change had been made that requires anyone who is thinking about building a dock on the waterfront to obtain a permit because of the possibility of disrupting the sediment in the water.

Dr. Howze then further detailed the four areas. For example, community involvement and outreach activities are being conducted by Mr. Pereira and his group in the ORR community. Target audiences in this area include people such as the ORRHES members, interested community members, other interested groups, community officials, and the local media. Strategies utilized to identify the community concerns include a website that is accessible to everyone. This website has the level of detail that might be of particular interest to the ORRHES members and to interested community members. The group also sends out pre- and post-meeting mailings and press releases associated with the PHAs. They also arrange meetings such as the ORRHES meetings and other meetings. The website is: www.atsdr.cdc.gov/hac/oakridge. The purpose of the community assessment process in which the ORRHES is engaged currently is to refocus the gathering of important information about the ORR community that the agency would utilize to develop communication and health education materials, activities, and programs. The data contain things such as:

- ❑ Basic demographics for the eight county area
- ❑ Community infrastructure (e.g., medical resources or churches)
- ❑ Community networks for health education and promotion (e.g., churches, network of health departments, cooperative extension service agents)
- ❑ What the community knows about environmental hazards (No good grasp of this)
- ❑ What the community believes about living in the ORR area (No good grasp of this)
- ❑ Where community members get their health and environmental health information (Some ideas about this)
- ❑ Communication channels preferred by the different groups (Not known, but may be, as in Eastern Pennsylvania, that people rely on their health care providers for information, but in many communities, the clergy are often persuasive sources of information)

Dr. Howze explained that as they were building their evidence base, they were taking a four-pronged approach. Step one is to review existing reports, step two is to conduct some focus groups, step three is to conduct a literature review, and step four is to talk with people who are leaders in different aspects of their communities.

At this point the agency knows that:

- ❑ Cancer, heart disease, and respiratory problems are common concerns
- ❑ Physicians are the most frequently cited source of health information
- ❑ Hospital-based programs may be favored
- ❑ Short, written materials are preferred

Some of these patterns are similar to general patterns found in many populations. In terms of physicians being trusted sources, other research suggests that trickle-down does not necessarily work. There has to be a push-up by educated patients. This is something that will need to be investigated. Some key questions that the communication and education plan needs to answer about the different audiences before appropriate strategies may be developed include:

- What are our audiences' interests, opinions, perceptions, and information needs regarding the release of the White Oak Creek PHA and other PHAs?
- What do they recommend we do to communicate the findings of the PHA, to include approaches, sources, channels, and materials?
- What health issues continue to concern the community related to the PHA and in general, such as perceived health issues? For example, Dr. Sterling mentioned that heart disease is a community concern. That is something that ATSDR would want to discuss with the health department and see if there are some ways to address this concern.
- Do the developed materials communicate to our audiences what we want to convey and what they want to know?

Dr. Howze indicated that the DHEP wanted to give the ORRHES a taste of what might be possible, depending on the results of the needs assessment, but there are some things that could be done with each audience with the ORRHES advisement. For example, the DHEP is going to continue to communicate the results of the PHA and develop mechanisms that are effective to do that. Information will be continually added to the website. The agency is going to continue to develop the brochure, "Do Radionuclides from White Oak Creek Affect the Health of People?" For example, one activity might be a short, portable, video presentation that could be taken to community meetings, which is something that the ORRHES has asked for, that discusses what it is like to conduct a PHA. This would be an activity for people who are living in the White Oak Creek area and would be presented in a way that would take the technical process reflected in the Red Cover and put it in a visual format that would walk people through some of the steps of a PHA that are of interest to them.

Dr. Howze shared strategies, activities, and materials for audiences that might be outside the PHA area. The group might want to work with the Oakridge Museum to develop an exhibit that explains risk assessment. This exhibit might have a mobile component that could be taken to locations like the Kingston Community Center as part of a public education effort to help explain PHA findings and how those findings were developed. For specific interested groups, the group might undertake several different projects. For example, they might want to assemble community leaders in one county or across the area and present a detailed briefing of the PHA results, so that the leaders obtain those results in advance and are in a better position to engage in discussions with community members about those results. A special, in-service educational opportunity could be provided for high school teachers in the ORR community, for which they could obtain in-service credit. They, too, are opinion leaders and hold the key to being able to educate students, parents, and other community members. Another idea would be an oral history project, where younger people in schools might interview people who have lived in the ORR community for decades, about what their experiences have been like.

With health care providers, the DHEP has thought about the possibility of conducting professional education and training with physicians, physician assistants, public health workers, and others, so that they would hear about and understand the findings of the different PHAs as they are released. This would be based on community needs. With the media, a number of different strategies might be useful. The media is in important source of information for everyone and can be a partner in communicating the results of PHAs. One of the thoughts the agency had was perhaps to develop some personal stories about ORRHES members or members of the community living in some of the different areas where the PHAs are being conducted, to convey the concerns and the passion that the ORRHES exhibits in the work that it does.

Dr. Howze stressed to the group that it was important to keep in mind that what eventually was accomplished would depend on available resources. Mr. Pereira already mentioned that the agency does not have a good sense thus far of what the resources might be in terms of funding, but resources do not include only funding. Resources also include working in partnership with the ORR community to assist the agency in areas such as completing the community assessment and gaining access into communities for real partnerships. Obviously, the plan is not finalized and the agency needs input from the ORRHES. Dr. Howze explained that although she had used White Oak Creek as an example during her presentation, a wider focus is planned beyond White Oak Creek.

Discussion Points:

- Ms. Adkins said she was thrilled with the agency's plan and appreciated the concern for the people in the community. However, she pointed out three areas of caution in terms of aspects to consider as the plan is refined:

    1. Part of the mistrust is that the community is wondering if all of the information been provided to the people who were working on the PHA. Have they been provided all of the information regarding where things were buried, where things drained, and where things blew? It was for this reason that she kept emphasizing a multi-layered map that shows the topography of the land, underground terrain, sinkholes, the locations where waste was buried, et cetera, so that the agency could locate the problem areas and could confidently tell community members that the issue has been addressed properly.

    2. Although nationwide, people may indicated trust in their medical professionals, based on her personal experience and from talking to approximately eighty people, the people in the Oak Ridge area do not trust the medical professionals. In the 1980s, Dr. William Reid found a correlation between an unusual incidence of kidney cancer in his patients and the metals that were being emitted from the plants in Oak Ridge. He was discredited, humiliated, and horrible things happened to him as a result of his findings. The medical community froze at that time. She said she and her friends tried to obtain medical help, but could not because doctors were afraid of dealing with anything related to metal exposures or problems from Oak Ridge. She actually has had physicians refuse to treat her and has had physicians withdraw from treating her after they found out her various exposures, because they did not want to be labeled a quack like Dr. Reid. This is a major hurdle for the local citizens, and one which the agency may not be aware.

3. It is important to include information on what to do if someone is suspicious that they have been exposed to something. Ms. Adkins said that a woman who planned to attend this meeting has strontium-90 showing up in her laboratory results. Ms. Adkins did not know if the woman would be well enough to attend in the afternoon, during the public comment period. The ORRHES and ATDSR do not need to just say, "Well, there is no apparent problem," because even this [indicating the PHA document on the table] says that some people could have possibly been exposed to these contaminants, and these contaminants are showing up in their bodies. What should someone do if they suspect they have been exposed? What do they do to set their minds at rest? Ms. Adkins concluded that this was going to have to be an important part of the plan.

- Dr. Malinauskas said he thought that the plan that Dr. Howze presented was well done. With regard to communication, he added that the group must be much more aggressive than they have been, and recognize that perhaps the most efficient way to communicate with the community is to address much smaller groups. Perhaps the ORRHES and the agency should go to the people and attempt to get on the agendas of clubs like the Rotary and Kiwanis Clubs, because those clubs generally contain many of the community leaders. Book clubs meet quite frequently, and talk radio is very popular. It might be possible to make an appearance on a number of those shows. Certainly, the issues should be placed on the agenda for the city council meetings.

- Dr. Howze responded that those were all very good suggestions and indicated that she talked to Dr. Peter Malmquist the week prior to this meeting, at which time he said that one of the things that would be helpful would be to create a short presentation that people like himself could take to the Rotary club and to other meetings. She thought that in the past, at least at one of the last ORRHES meetings, it also was a point of discussion that the group was interested in getting out and sharing with people what the ORRHES does and what some of the findings are. She thought all of those were great suggestions, and as influential people in their communities, she thought that the subcommittee members could do that. She said she would pull together something for this purpose.

- Mr. David Johnson thought the presentation was good, but said he observed in the left hand margin of the slides that there were pictures of young people, which were somewhat misleading. Referring back to Ms. Adkins' comments regarding some of the trauma that these youth have inherited in their families, seeing loved ones ill presents an issue of concern. When they go to school it sometimes creates behavior problems. He suggested that the agency remember inter-generational programs with which to engage youth within these communities, so that they can become active participants in this process.

- Dr. Howze responded that Mr. Johnson's observation about the photographs on the slides was a good one. She simply did not get a chance to insert other faces. She assured him that the agency's intent was to address the multi- and inter-generational population.

- As it related to communication, Mr. Lewis pointed out that the plan was quite basic and somewhat generic in contrast to the different things he had read, and he saw it as following a

general textbook approach. For example, when he flipped over to the community involvement and outreach slide, where there were little "x's" and bullets, much of that appeared to be the standard shotgun approach. In other words, to kill an ant, one was going to fire a shotgun. He thought that a strategy was needed that focused on the actual targets. For example, in a hostile situation, taking action after being shot in the head is not necessarily perceived as being proactive. He said that in the PHA, there seemed to be a division within the subcommittee and in the community as it relates to what the ORRHES does. One of the things is the area called "the past." There is a group of people interested in the past. Many of the people who are defined as activists are people who have lived in the Oak Ridge area a long time, and they have issues with the past and the contaminants that have been released. Another audience deals with "the present." Many times when he hears the group talk about the city council and going to meet with these various community groups, their primary interest is centered around whether the area is clean and what the future holds. He thought that the group was doing a pretty good job addressing those concerned with the present, while the group with the past was a tougher audience. Mr. Lewis said he would like to see the key strategies of the plan deal with the past issues. While the technical audience tends to understand past issues, others have a difficult time understanding. He suggested that the agency refine the plan, focus on key audiences, and with any audience concerned with the past, which is where most of the health concerns lie, develop a strategy with which to assist these audiences in better understanding the overall effort.

- Dr. Howze agreed that Mr. Lewis's suggestions made sense, and she reminded him that when she began her presentation she stated that the agency had not yet built this plan to that level of detail, because they did not have the data. They have not been out talking with people. Still, those strategies will become clear as the plan moves forward. She thought that his sectioning of the past, present, and future concerned audiences was interesting.

- Mr. Lewis stressed that the current programs do a good job for the present health concerns, but that the lingering issues are with the past. If the agency could separate those two time periods and think about methods with which to approach the two separate points of view, the plan might be more successful.

- Mr. Donald Box pointed out that, in his community, which involved mostly his church group of roughly 2600 members, he has found that even though most of them are elderly and have lived in the community for many years, very few, if any, really know what an ORRHES subcommittee member is or what the subcommittee is attempting to do. He thought to address this issue, a nighttime meeting in Oak Ridge was in order. The agency should publicize such a meeting three or four days in a row before the meeting, explaining to the community who the members are in the Oak Ridge area who they could contact to find out more information. Perhaps they could share ORRHES members' e-mail addresses, if people wanted to communicate in that fashion. During such a meeting, someone like Mr. Pereira could give a brief introduction about what the subcommittee has been attempting to accomplish and the members could be available for community members to talk to about some of their concerns. People will not usually stand up in a meeting such as this and voice their concerns, but if they had a chance to meet with an individual and talk to him or her,

then the ORRHES might be able to allay their fears or refer them to other members or ATSDR representatives who might give them some information or refer them to others. He believed this was necessary because few people know what the ORRHES is doing and who the members are. Not many people have even heard of the ATSDR. He thought that actually, practically no one had heard of ORRHES or ATSDR. Also, Mr. Box has a young doctor who is interested in working with the group. This doctor actually visits the various emergency rooms throughout the area, all the way to Greenville. Mr. Box planned to meet with the doctor in the next couple of days to see if he might collect information concerning fears that people, even outside the ORR, area might have with regard to the ORR community.

Ms. Adkins then pointed out that community members with cesium, strontium, and arsenic issues had arrived, but they could not wait until the public comment period. She asked if the agenda might be reworked to allow an additional but brief comment period between then and 4:30 p.m., and if it might be possible to have five minutes at this time. Dr. Davidson agreed to give the public an additional, brief, five-minute comment period. The original public comment period took place as scheduled, later in the meeting. Ms. Adkins introduced Mrs. Johnson Stokes and her daughter Janice.

Public Comment Period

Ms. Janice Stokes
Citizen, ORR Community

Ms. Johnson Stokes opened her presentation by thanking the ORRHES for making the change in their schedule and allowing her to speak. She indicated that it had been a long time since she had attended one of the ORRHES meetings, but this meeting in Kingston was close to her heart because this is her hometown and she still has family who live in Kingston.

Ms. Johnson Stokes said she was reviewing the draft PHA document that was sent to her, and she wanted to make a comment before the official comment period began so that the subcommittee could be thinking about her observations. It is quite vital that the ORRHES understands that the ORR citizens live in a valley between the Cumberland Mountains and the Smokey Mountains. One of the problems is that the agency is looking at one individual contaminant at a time, and the quantity of that contaminant being released into the air will almost always show up as no public health effect. What the agency is not looking at is the cumulative total of releases (air, water, soil) with regard to the amount of radiation and chemicals to which the people in this valley have been exposed, not just downstream but also downwind, and including farmers and others who have eaten local produce and who drank the milk. This was one of Ms. Johnson Stooke's major concerns as she conducted a preliminary review of this latest ATSDR PHA document. She asked that the ATSDR address this concern before the assessment continued, because she did not think that it was worth reviewing anything if this issue was not addressed.

Secondly, in Kingston, she said she had witnessed the following: Upon starting down Highway 58, on Kentucky Street and Ray Street in Kingston, she first noticed the sky darkening with seagulls flying over the water. She and a friend stopped to look closer at what was causing such

a feeding frenzy. They stopped at the park, got out of the car, and walked near the river's edge, where they found a massive fish kill floating downstream. Concerned, she placed a call to the Tennessee Wildlife Resources Agency Office and reported the fish kill. The Tennessee Wildlife Resources Agency was unaware of this. Ms. Johnson Stokes and her friend followed the flow of the fish kill to the mouth of the Clinch River, where it empties into the Tennessee River. They then noticed that the fish appeared to be floating upstream of the Tennessee River, which is just around the bend, south and to the left. She and her friend proceeded to a location under the Highway 58 bridge, which is over the Tennessee River, and noticed that the fish were, indeed, floating upstream and past the city of Kingston Water intake. This is a serious concern, since anything that may have killed the fish, other than temperature change or rollover, could affect the humans who drink the water.

It was explained to her that a natural phenomenon occurs when the Tennessee Valley Authority (TVA) shuts off one dam up the Tennessee River and at Melton Hill on the Clinch River. When the TVA shuts off Fort Loudon Dam spilling, Melton Hill is still spilling. Although the water is flowing, it is actually sucked back upstream, probably into the ground caverns. This was scientifically explained to her as being a phenomenon that does occur, which can be observed when buoys float upstream on the Clinch River. This can also be seen on the Tennessee River side. She is aware that this phenomenon does occur and it is quite visible. However, fish kills happen in this area often, several times a year. In the past, fish kills occurred so often that in the morning, there was an associated odor. As a student of this issue for an extensive period of time, as far as Ms. Johnson Stokes was aware, during the strontium spill at K-25 in the 1980s, which shut down Kingston's water intake for only one day, Kingston's water intake has never been shut down for any kind of spill other than that one. Although a local problem, Ms. Johnson Stokes thought it was definitely a problem that the DOE should investigate.

Discussion Points:

- Dr. Davidson asked Ms. Janice Stokes to provide her comments to Mr. Bill Taylor at the Oak Ridge Field Office so that they could be included with the comments that the work group is submitting to ATSDR.

- Ms. Janice Stokes agreed to provide her documents to the ORRHES. She added that on the handwritten document she had in her possession, she had not written her comments regarding her review of the PHA.

- Dr. Davidson asked if her comments were related to White Oak Creek.

- Ms. Janice Stokes replied that they were related to White Oak Creek. The Clinch River carries White Oak Creek water into Kingston, and with over 200,000 curies being released from White Oak Creek from approximately 1944 to 1971, that is a lot of radiation. She wondered if anyone in the room knew how many counts per second one curie was.

- Dr. Cember responded that it was thirty-seven billion disintegrations per second.

- Ms. Janice Stokes stated that thirty-seven billion disintegrations per second times 200,000 is how much radiation has come into this river. Kingston certainly needs activist currently, and she considered the ORRHES members activists or they would not be here. She stated that she appreciated their activism.

- Dr. Davidson asked Ms. Janice Stokes again to make sure the ORRHES received her written comments.

- Ms. Janice Stokes indicated that she had a letter to the Tennessee Department of Health (TDH) about the water intake, which she could copy for Dr. Davidson, but noted that she had made her comments about that in her presentation, for the record.

- Dr. Craig asked for the ORRHES copy Ms. Janice Stokes' comments for the work group, because they were good points.

- Dr. Cember said he remembered reading in the PHA that the estimated doses were based on all of the nuclides, not just each one separately. He found the paragraph and read that the "estimated whole body dose is based on a minimum 50-year intake or less than 100 millirems." He believed that this was for intake from 1944 until 1991. "The maximum estimated dose after 55 years of intake is 230 millirems for all of the radioisotopes." He said he read directly from the document to point out that the isotopes were not considered individually as being trivial, but together they were considered and the doses were estimated on that basis.

- Ms. Janice Stokes asked if ChemRisk calculated that estimation.

- Dr. Cember indicated that he did not know. He was just reading from the Red Cover PHA.

- Dr. Paul Charp indicated that the past exposure assessments from the 1940s through 1991 were performed by the Specialists in Energy, Nuclear, and Environmental Sciences (SENES) of Oak Ridge, under a contract with ChemRisk.

- Ms. Janice Stokes asked if a PHA had been conducted prior to their estimation (e.g., Was all of this information known when they calculated their estimations?).

- Dr. Charp responded that ChemRisk and SENES based their estimations on all of the information they could glean from DOE reports, interviews with workers from the site, and a document review through all classified and unclassified information. Their report was released in 1996. The current PHA covers releases from 1990 through the present.

- Ms. Janice Stokes commented that Dr. Owen Hoffman participated in the ChemRisk study. Dr. Hoffman has developed a program that shows considerably more exposure than this estimation shows. His calculations are shown in a document that the ORRHES can obtain. It is also based upon his participation in the review. She recommended that the group listen to Dr. Hoffman and observe his calculations as well, so that the group would have more than just one source for those calculations.

- Dr. Charp explained that the sources the ATSDR used for the past doses were his calculations.

- Ms. Janice Stokes acknowledged this, but said she did not know what time ATSDR did their calculations. The calculations she was talking about were done after the ChemRisk study was closed.

- Dr. Charp asked if Dr. Hoffman was refuting his own calculations.

- Ms. Janice Stokes replied that she was not going to get into a scientific debate with anyone, but she asked Dr. Charp to contact SENES and have them present what they believed to be the correct dosages to the ORRHES. She thought that the committee would see a major difference between what the ATSDR is saying and what SENES says.

- Dr. Craig indicated that the ORRHES has Dr. Hoffman's comments, and all of his calculations will be available to the reviewers and will be incorporated in the PHA.

- Dr. Davidson pointed out that Dr. Hoffman has never been shy about giving the ORRHES his comments.

Dr. Terrie Sterling then presented the proposed plan for collecting information about the ORR community suggested timeline. Ms. Mosby noted that the NAWG's recommendation to the ORRHES would follow Dr. Sterling's presentation.

Proposed Plan for Collecting Information about the ORR Community

Dr. Terrie Sterling
DHEP/ATSDR

Dr. Sterling pointed out that the plan the DHEP was presenting was more detailed and related to the fact that the DHEP feels strongly that additional information is needed from the ORR community and the surrounding area prior to developing appropriate public health education and promotion activities. The DHEP wants to collect information so that the agency may address adequately environmental health concerns, as well as to integrate findings from the PHAs as they are released. For purposes of this plan, "community" refers to an eight-county area, including Anderson, Blount, Knox, Loudon, Meigs, Morgan, Rhea, and Roane counties. The types of information that the DHEP plans to collect through various approaches include:

- Demographics for the eight county area
- Community infrastructure (e.g., medical resources)
- Existing community networks
- What the community knows about environmental hazards
- What the community believes about living in the ORR area
- Where community members get their health and environmental health information
- Which communications channels are most often used by different groups in the community

- Other information as appropriate

Dr. Sterling presented the proposed approaches for collecting the information, reminding everyone that Dr. Howze had already reviewed these four approaches which included:

- Reviewing existing documents and reports
- Conduct focus groups
- Review existing literature
- Key resource interviews

Dr. Sterling then went through tables that showed a step-by-step process, along with an estimated timeline of how long it might take to accomplish each of the activities.

The task of reviewing existing documents and reports involves the following steps:

- Gathering and identifying materials to review, such as the University of Tennessee report and reports on the public health status that are produced by the county public health departments;
- Designing a template for extracting the types of information that would help answer some of the data questions;
- Extracting and organizing the data;
- Drafting a summary report;
- Gathering feedback from the ORRHES and the NAWG on the report, given for editing; and
- Finalizing the summary report on the review of existing reports and documents.

Dr. Sterling indicated that the body of the tables she would be displaying showed the estimated weeks allotted for each of the activities. In the Review of Existing Reports Timeline, for the first two activities of identifying and gathering reports and designing the template for extracting and organizing the data, would occur simultaneously, but might not be completed at the same time. Overall, the review of existing reports is anticipated to take approximately eleven weeks. The DHEP also feels that it is quite important to conduct focus groups, with the ORRHES's assistance. This was a major step in the development of health education/health promotion materials that everyone felt would be quite useful. Therefore, the DHEP's intent is to contract with someone to assist them in conducting the focus groups as well as to invite the ORRHES's participation and identification of community members who might be willing either to participate in or be co-facilitators for these focus groups. Dr. Sterling pointed out that the steps in the focus group activity include:

- Preparation will be made for focus groups
- Focus group participants and focus group leaders will be identified and invited
- Focus group leaders will be trained
- Focus groups will be conducted
- Focus group data will be compiled and a report drafted for review
- Feedback will be obtained on the report
- Summary report will be finalized

Dr. Sterling acknowledged that this thirteen-week timeline was ambitious, but she believed it could be accomplished with the right kind of assistance and support. Another step in the development of the health education and promotion materials involves a literature. Steps in the literature review process include:

- ❑ Identify appropriate publications, including newspaper articles, journals, et cetera
- ❑ Design a template for abstracting and organizing concerns
- ❑ Extract and organize
- ❑ Draft summary report for review
- ❑ Obtain feedback on report for editing
- ❑ Finalize summary report as part of community assessment.

The final activity will be the Key Resource Interviews. The DHEP wants to be efficient about this step, and at this point, the belief is that the sector of the community that needs to be tapped into is the public health sector, which includes physicians, hospitals, and other health resources that exist in the ORR community. Dr. Sterling asked for the ORRHES's and other community members' assistance with identifying representatives with whom it would be appropriate to conduct interviews. Steps in the Key Resources Timeline include:

- ❑ Identify up to 9 representatives from the health care system and other community networks
- ❑ Use interview questions from other community assessments and tailor for the ORR community
- ❑ Interview representatives
- ❑ Compile results from interviews
- ❑ Write draft summary report
- ❑ Obtain feedback on report given for editing
- ❑ Finalize summary report

Dr. Sterling estimated that it would take approximately 13 weeks to complete all of these tasks, with assistance from the ORRHES and NAWG members. Many of the activities will overlap, with some occurring simultaneously and others pending. Dr. Sterling pointed out that week one was the same week on all of the tables. A timeframe has not been scheduled yet for the project. The information that the DHEP hopes to gather from all of these activities include:

- ❑ Clarify and map health concerns and resources
- ❑ Target health education and health promotion efforts
- ❑ Find out what and how information needs to be delivered
- ❑ Discover what else is occurring in the community
- ❑ Encourage collaboration and avoid duplication

Health Education and Need Assessment Work Group Report

Ms. Donna Mosby
Health Education and Need Assessment Work Group (NAWG)

Ms. Mosby pointed out that she planned to present the Health Education and Need Assessment Work Group (NAWG) Report in the form of a recommendation. She indicated that the Co-Chairs are Mr. Lewis and herself and that the NAWG meeting was held on Monday, February 2, 2004. Ms. Mosby said that everyone was aware that gaps were left behind after the George Washington University study. **Therefore, the NAWG's recommendation was that ORRHES recommend ATSDR adopt the Proposed Plan for Collecting Information about the ORR Community Suggested Timeline that is outlined as a process to fill the gapes that were left behind after the George Washington University study**. This will be an opportunity for ORRHES members to sign up and participate themselves and/or identify individuals in the community who might be willing to help carry out the plan. Ms. Mosby clarified that this recommendation was being brought forth from the NAWG, for the ORRHES to pass on to ATSDR. She asked if there were any questions or comments from those who were not a part of the NAWG.

Discussion Points:

- Mr. Lewis pointed out that during the previous evening's presentation, he heard some discussion about the utilization of the Savannah River Site (SRS) report as it relates to focus groups. The way that the SRS conducted their focus groups was examined. The work group also read another document from Fallon. The Fallon's focus group process was different than the SRS's process. The Fallon focus groups also were conducted under the umbrella of the ATSDR. Their plan appeared to bring together clergy and all of the people together to set up a focus group to address the issue, versus the model that was used at the SRS. He did not know which planning stage the DHEP was in, but he thought it might be beneficial to consider this different approach to focus groups. He asked the ATSDR to consider the different types of styles and let the ORRHES know what they thought of them.

- Dr. Sterling thanked Mr. Lewis for his comments, indicating his was the kind of feedback that the agency was seeking. She said one thing they might do is use the focus group guides, which are essentially the questions that were developed to do the focus groups at SRS as a beginning, and then tailor those to the ORR community. However, his suggestion took the process a bit further, and the agency certainly would be willing to consider those suggestions. ATSDR was involved in the Fallon focus groups.

- Mr. Lewis said he thought the ATSDR did a pretty good job with those focus groups. He then asked whether the Phase I/Phase II process was being continued in this process, with what was found in the community assessment determining what would occur in Phase II.

- Dr. Sterling explained that there are many new players in this process and the Phase I/Phase II process was discarded. However, the DHEP acknowledged that they did need more information about the ORR community and the surrounding area in order to help plan the types of health education/health promotion activities would be the most appropriate for the different communities in conjunction with the PHAs. She said that a "Phase II" has actually already begun with activities such as some of the work that Dr. Howze presented with White Oak Creek, work on the website, and the briefs to the lay people. These activities have

begun in conjunction with Dr. Pereira and his group, but the information base still needs to be supplemented with more evidence.

Initial Release of PHA on White Oak Creek Radionuclide Releases from the DOE ORR

Dr. Anthony Malinauskas
Oak Ridge Reservation Health Effects Subcommittee (ORRHES)

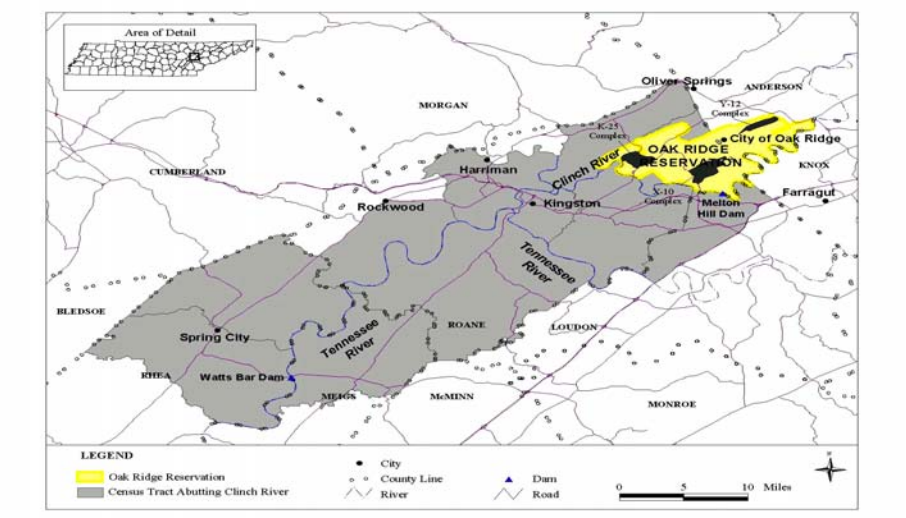
Dr. Malinauskas said that the previous week, he heard a presentation from the Mayor of Cumberland County, who indicated that, within a short period of time, the City of Crossville is going to have a severe water problem. They examined various options, and one of the most attractive options was to extract water from Watts Bar. The citizenry rejected this option and are considering a much more expensive alternative because of the impression that the Watts Bar water is contaminated with radiation. Dr. Malinauskas thought that if the ORRHES could convince these people that the Watts Bar water is potable, then they will save as much money as has been spent on the ORRHES.

Dr. Paul Charp
Agency for Toxic Substances and Disease Registry (ATSDR)

Dr. Charp indicated that he gave a similar presentation to the PHAWG several weeks prior to this ORRHES meeting. Since then, it has been modified slightly. He noted that the handouts that the ORRHES had on their tables were from the PHAWG meeting, but he would print the updated slides and send them to the subcommittee members. Dr. Charp did not review all of the tables or numbers. Instead, he presented the group with the "bottom line" regarding the doses (not the releases), the conclusions that have been made, some of the community concerns that have been addressed, and several other miscellaneous points.

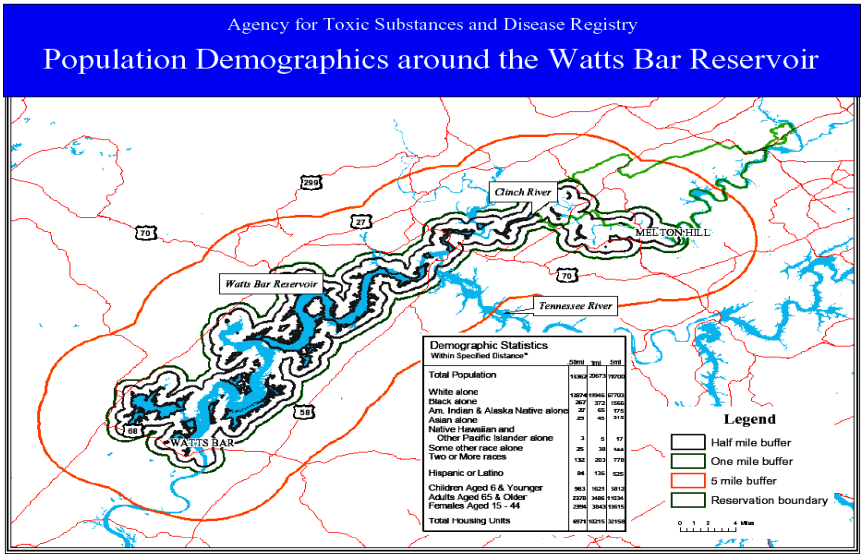
Dr. Charp first shared a map of the White Oak Creek study area, showing the ORR on the northeast side, going down toward Watts Bar and the Tennessee River, through the bottom of the map. He pointed out Spring City, Watts Bar Dam, Oak Ridge, and the City of Kingston. The gray area is the impacted area for the White Oak Creek study area.

Map of the White Oak Creek Study Area



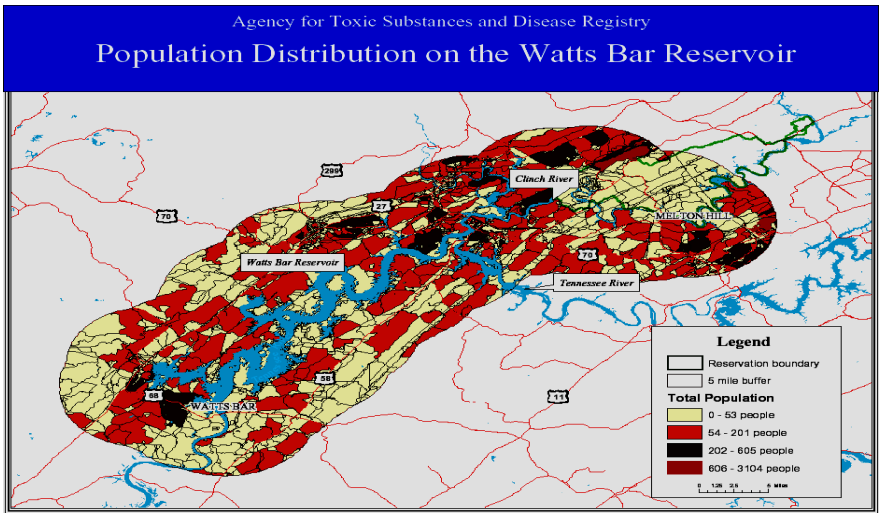
Dr. Charp then shared a demographic distribution of people living around the Watts Bar Reservoir at different distances from the site. The study went to a half-mile buffer, a one-mile buffer, and a five-mile buffer from the channel. He is working to re-color some of the buffer areas so that readers can tell the difference between the buffers. Again, Dr. Charp pointed out the ORR, the Clinch River, and White Oak Creek. In the small box is the demographic makeup of the population by race and ethnicity for the different areas from the reservoir. Dr. Charp also pointed out where White Oak Creek was located in relation to Melton Hill Dam. The black dot is Jones Island, and White Oak Creek comes out approximately two-tenths of a mile above Jones Island.

Population Demographics Around the Watts Bar Reservoir



To expand on the demographics, Dr. Charp shared the population distribution on the Watts Bar Reservoir. The majority of the population live on the floodplain of the Tennessee River, but the floodplain does not fluctuate more than a few feet above or below the average river height above sea level, which is about 575 feet. Dr. Charp pointed out the Melton Hill Dam, Kingston, Watts Bar, and the area of highest population.

Population Distribution on the Watts Bar Reservoir



- **Source: ChemRisk 1999a**

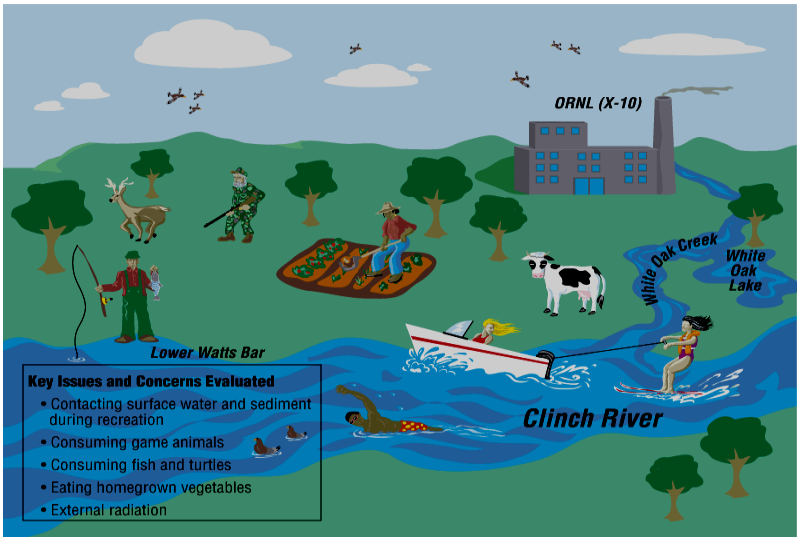
With regard to the exposures, pathways, and community concerns used to address the White Oak Creek issues, Dr. Charp shared a pictorial that showed some of the pathways, which included:

- ❑ Recreational use of the Clinch River represented by the water skier
- ❑ Recreational use by swimmers
- ❑ Gardening
- ❑ Livestock
- ❑ Fishermen
- ❑ Waterfowl
- ❑ Hunters
- ❑ Others

The lower box reflects the key issues of:

- ❑ Contacting surface water and sediment during recreation
- ❑ Consuming game animals
- ❑ Consuming fish and turtles
- ❑ Eating homegrown vegetables
- ❑ External radiation

Possible Exposure Situations Along the Clinch River



External radiation is a concern here because over the years, as materials left White Oak Creek, they would go into the river, and as the river would fluctuate or as the river was dredged, sediment was brought up to the banks. There are still some of the long-lived radioisotopes in the banks. The main radioisotopes involved are strontium, cesium, and some cobalt. Cobalt has

approximately a five-year half-life, but some can still be detected with certain instruments after three, four, or five half-lives.

The Task 4 Report is the report that was prepared by the SENES group for the ChemRisk study of the Oak Ridge Health Dose Reconstruction Project that was run by the State of Tennessee. The pathways that SENES examined were: Fish consumption; water, meat, and milk ingestion; and walking along the banks of the river (external exposure). SENES examined adults and children in multiple age groups and evaluated a number of radionuclides, including cesium-137, ruthenium-106, strontium-90, cobalt-60, iodine-131, cerium-144, zirconium-95, and niobium-95. Then they listed different exposure scenarios. The categories for the fish consumption were based on the number of fish meals someone would eat on a weekly basis. Importantly, for the water ingestion for K-25, the water ingestion around the Grassy Creek area was measured. The reason this is important for K-25 is because Grassy Creek was the water intake location for the Happy Valley Residential community right across the road from K-25 and S-50. The ATSDR is going to be looking at water ingestion again for K-25 activities.

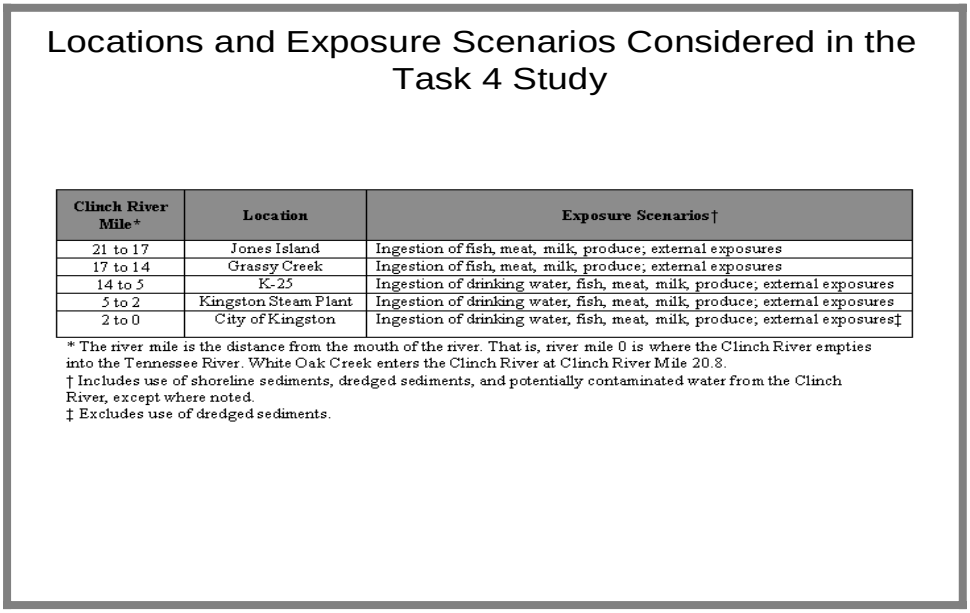
Past Exposure Pathways Evaluated by the Task 4 Report

Pathway	Individual	Radionuclide	Description of Exposure Situation
Fish consumption	Adult and child	Cs 137, Ru 106, Sr 90, Co 60	Frequent consumption of Clinch River fish. Three different ingestion rates were evaluated as follows*: Category I: 1 to 2.5 fish meals/week Category II: 0.25 to 1.3 fish meals/week Category III: 0.04 to 0.33 fish meals/week
Water ingestion	Adult and child	Cs 137, Ru 106, Sr 90, I 131	K-25/Grassy Creek (adult) and city of Kingston (adult and child)
Meat ingestion	Adult	Cs 137, Ru 106, Sr 90, Co 60	Home-produced/cattle drank contaminated water
Milk ingestion	Multiple groups	Cs 137, Ru 106, Co 60, I 131	Home-produced milk/dairy
Walking along sediment (External exposure)	Adult	Cs 137, Ru 106, Sr 90, Co 60, Ce 144, Zr 95, Nb 95	Walking along shoreline sediments

* A meal was defined as 0.1 to 0.3 kilograms per meal for males and 0.08 to 0.25 kilograms per meal for females.

Meat ingestion measurements included home-produced/cattle that drank contaminated water and so forth. SENES described a fish meal as somewhere between 100 and 300 grams per meal. There are about 30 grams in an ounce, which means three to ten ounces or so of fish for males and a bit less for females.

Dr. Charp indicated that Table 8 listed the locations and exposure scenarios considered by the Task 4 study by Clinch River mile.



Locations and Exposure Scenarios Considered in the Task 4 Study

Clinch River Mile*	Location	Exposure Scenarios†
21 to 17	Jones Island	Ingestion of fish, meat, milk, produce; external exposures
17 to 14	Grassy Creek	Ingestion of fish, meat, milk, produce; external exposures
14 to 5	K-25	Ingestion of drinking water, fish, meat, milk, produce; external exposures
5 to 2	Kingston Steam Plant	Ingestion of drinking water, fish, meat, milk, produce; external exposures
2 to 0	City of Kingston	Ingestion of drinking water, fish, meat, milk, produce; external exposures‡

* The river mile is the distance from the mouth of the river. That is, river mile 0 is where the Clinch River empties into the Tennessee River. White Oak Creek enters the Clinch River at Clinch River Mile 20.8.
† Includes use of shoreline sediments, dredged sediments, and potentially contaminated water from the Clinch River, except where noted.
‡ Excludes use of dredged sediments.

The Clinch river empties into the Tennessee River at Clinch River mile zero. So, one should consider going up river from Kingston and up to Clinch River mile 21, which is at the confluence of White Oak Creek with the Clinch River. Jones Island starts at approximately Clinch River mile 20.8. For those exposure scenarios listed, the Task 4 Study calculated all of the doses. Dr. Charp indicated that he was not going to go into their scenarios or their uncertainties, but they looked at quite a number of uncertainties and a large number of calculations to estimate their doses for their report.

Dr. Charp then shared a summary of the Task 4 Report estimated organ-specific (equivalent) radiation doses for past exposure pathways, which ran from approximately 1945 to 1991, which is where the Task 4 Study ended. This table showed that someone who ate fish caught near Jones Island would have received the largest radiological dose to the bones of approximately 810 millirem. The dose to the lower large intestine would be 570 millirem for Jones Island and if someone in Kingston caught fish, the dose to the lower large intestine would be 64 millirem. If water had been ingested in the Grassy Creek area, the exposure would be approximately 110 millirem to the bone.

Ratio of Organ-Specific Radiation Doses Relative to Fish Ingestion at Jones Island

Pathway ‡†		Ratio of Radiation Dose*				
		Bone	Lower Large Intestine	Red Bone Marrow	Breast	Skin
Fish Consumption	Males	1.0	1.0	1.0	—	1.0
	Females	1.0	1.0	1.0	1.0	1.0
Water ingestion (K-25/Grassy Creek)		0.16	0.16	0.09	0.0088	0.0089
Meat ingestion (K-25/Grassy Creek)		0.002	0.0042	0.0016	0.0013	0.0011
Milk ingestion (K-25/Grassy Creek)		0.0012	0.00026	0.00082	0.00019	0.00018
Walking on sediment (External exposures) †		0.017	0.014	0.015	0.038	0.037

* The value used to calculate the ratio was the average dose received by males and females consuming fish caught near Jones Island.
† Based on exposures from walking along the shoreline.
‡ Maximally exposed category
— Doses in males were too low to be significant.

- **Source: ChemRisk 1999a**

ATSDR normalized these values to the highest level, to give people an idea of the magnitude of these doses. For example, for someone who ate fish caught at Jones Island, their normalized value would be 1 and walking on sediment would be 1.7% of the dose they would have gotten from eating contaminated fish. Likewise, the dose to the skin would be approximately 3-4% while walking on sediment from external exposure.

Current Exposure Pathways Evaluated for the Lower Watts Bar Reservoir

Pathway		Individual	Description of Exposure Situation
Sediment	Surface	Adult and child	External radiation exposure from contact during recreational activities.
	Subsurface	Adult and child	External radiation exposure from contact when handling dredged material.
Surface water		Child	Exposure when drinking unfiltered water and external radiation exposure from showering with or swimming in water at the Lower Watts Bar Reservoir.
Fish consumption		Adult and child	Eating two 8-ounce meals each week of fish caught from the Lower Watts Bar Reservoir.

These numbers show that the greatest concern would either be from water ingestion or fish consumption, based on the contaminants that were released in White Oak Creek prior to 1990 or 1991. The floor was opened for discussion on the first part of Dr. Charp's presentation.

Discussion Points:

- Mr. L.C. Manley asked on which side of Highway 70 the two rivers ran? He wanted to be able to picture which side of the rivers people would use the most in relation to the contaminants. After Dr. Charp explained the location of the two rivers, Mr. Manley asked if the people who fish in Watts Bar beyond where the Clinch comes into the Tennessee River would have less problems with the pollution coming from X-10.

- Dr. Charp explained that the ATSDR evaluated that area as the Lower Watts Bar Reservoir, which is below the Clinch River and Tennessee River confluence. Anything above that would be Upper Watts Bar. Upper Watts Bar, from the Clinch River up to Melton Hill Dam, would be the biggest dose.

- Mr. Manley said his thoughts were along the lines of Ms. Adkins. He was trying to get some feel for the area that she had been discussing. He indicated that Ms. Adkins had given him a map that showed the Lakeside Golf Course, which is on the right hand side and closer to the Tennessee River than the Clinch River.

- Ms. Adkins affirmed that this was the case, and that was why she keeps asking for an overlaying map that really shows all of the doses. She had her community pinpointed on the map, but she did not have the rest of the ORR community in perspective. She had to relate everything to where she lives. Also, one of the things that was important about her community's water when she was growing up was that everyone had well water and springs, and the wells were right beside springs. The lakes and streams were created by springs. It is the underground aquifer that she is more concerned about than the river water. Ms. Adkins said that after listening to Ms. Johnson Stokes, she grew concerned about the groundwater with all the dead fish, because her community ate those fish. The people in her community fished all around the Kingston area.

- Mr. Hanley said he bought some maps, so that the subcommittee could hear what the concerns were and then see how the creek and the springs were situated, but he forgot those in Atlanta. He said he would have the maps sent to the Oak Ridge office, so that they would be available locally. Also, ATSDR is going to be looking at groundwater issues in the ORR area in a separate PHA. That assessment would address any contaminants that would have been released from the reservation.

- Dr. Charp indicated that assessment would also include the infamous hydrofracture issues and more recent groundwater monitoring that is going on. He noted that the dose reconstruction project did not look at any groundwater.

- Mr. Washington indicated that more importantly than the groundwater is that in certain cases, particularly in this area, the surface water becomes the groundwater and the groundwater becomes the surface water. Both scenarios must be taken into consideration. Another thing that must be considered is that in the present these facilities are operating at less than 100%. In the 1940s and 1950s, these facilitated were operating at full capacity and, in many cases, they did not know what to do with these rinse waters.

- Dr. Charp responded that many times they would dig a lime sludge lagoon or a sediment basin, pump the water in there, and let it percolate into the ground. That is another issue.

- Mr. Washington had a project doing that once and someone told him that they should try to pump it into the ground, but the way water percolates in this region is very, very slowly.

- Dr. Charp added that if it hits a karst area, then it just disappears. There is a lot of karst groundwater in this area that really makes groundwater analysis quite difficult. Karst water can flow up and down against the gradients, and if it hits a cave, all bets are off.

- Dr. Cember asked if this water ingestion pathway was based on ingesting raw water from the river, tap water, or spring water. Dr. Charp responded that it was based on all of those.

- Dr. Cember asked if the numbers were a weighted average. Dr. Charp referred that question to Dr. Gordon Blaylock. Dr. Blaylock indicated that he did not remember exactly. Dr. Charp indicated that for the current, ATSDR looked at someone who would have incidental ingestion of river and lake water while swimming versus drinking the water from Kingston's treatment facility. Also, regarding the maps, he did go down to the Tennessee map store and pick up some topographical maps, but they do not have a three-dimensional relief map that is any good. What they have is a topographical map that goes from just east of Knoxville to a bit past the plateau. So, nothing can really be seen on it. One inch was approximately 50 miles.

Dr. Paul Charp, Presentation Continued
Agency for Toxic Substances and Disease Registry (ATSDR)

Dr. Charp continued his presentation by stating that the current exposure pathways that ATSDR examined included the period from 1990 through 2002 or 2003, depending on when the last data were analyzed and sent to ATSDR by the state, DOE, TVA, or anyone else. The surface and subsurface sediment was examined. He asked the group to remember that much of the material that came out of White Oak Creek sat on the surface, and some of it was not water-soluble. Every time TVA opened up the spillways of Melton Hill, it would scour the river bottom and wash it downstream. Over a period of time, sediment would build up. Therefore, some of the subsurface sediment could be below the bottom of the river channel, which is one reason that he believes there is no more dredging allowed on the Clinch River and on parts of the Tennessee River. The ATSDR also looked at surface water for children and then fish consumption for both adults and children, saying that they were eating two eight-ounce fish meals a week caught from the Lower Watts Bar, which would be below the confluence of Clinch River with the Tennessee River. At first, they looked at the exposure investigation that ATSDR conducted with the fish

and turtles for PCBs, but then decided that higher values should be used. So these values would be for someone who might eat a lot more fish than they should, about a pound a week.

Estimated Whole Body Radiation Doses For Current Lower Watts Bar Reservoir Exposure Pathways

Pathway		Individual	Whole Body Dose (mrem/year)
Sediment	Contact with surface (external radiation)	Adult and child	The dose to the whole body is less than 15 mrem/year.
	Contact with subsurface (external radiation)		The dose to the whole body is less than 20 mrem/ year.
Surface Water	Swimming or showering (external radiation)	Child	The dose to the whole body is 0.05 mrem/year from external radiation exposure during recreational use or showering.
	Ingestion		The dose to the whole body is less than 0.25 mrem/year from ingestion of surface water used as a source of drinking water.
Fish consumption		Adult and child	The dose to the whole body is less than 6 mrem/year from ingestion of two 8-ounce fish meals a week.

ATSDR dose estimates, for fish consumption for an adult and child, that the dose to the whole body is less than six millirems per year. That is from ingestion of two fish meals per week. The health assessment also broke the doses down by organs because there are several contaminants of concern, including strontium-90, which is a bone seeker, cesium-137, which is deposited uniformly throughout the body. Then there are some of the longer-lived half-lives such as cobalt-60, which can be distributed throughout the entire body. Tritium, which is still being released, can be distributed throughout the entire body. Dr. Charp explained that surface water ingestion assumes that a child is swimming in the lake. The dose is to the whole body and is less than 0.25 millirem per year. This would be someone who might ingest a couple of ounces of water per hour swimming in the lake. The swimming dose of 0.05 is exposure that is external to the body. Dr. Charp opened the floor for discussion related to the second half of his presentation.

Discussion Points:

- Dr. Malinauskas asked if there was a 1:1 correlation between dose and the amount of fish eaten. Dr. Charp indicated that it was a 1:1 correlation.

- Mr. Box asked if ATSDR looked at yttrium in these studies. Dr. Charp indicated that they did look at yttrium. Yttrium is important because strotium-90 decays into yttrium-90, and if one has one curie of pure strontium-90, in a period of approximately two weeks, one will have about one curie of strontium-90 and one curie of yttrium-90. Also, the yttrium-90 is more radioactive than the strontium-90. Therefore, both of them have to be taken into

account. Dr. Charp explained if someone only has an ingestion of strontium-90, then they only look at the strontium-90, because the dose numbers take that into account, but since both of them are in the environment, both must be considered.

Dr. Paul Charp, Presentation Continued
Agency for Toxic Substances and Disease Registry (ATSDR)

Dr. Charp then shared a summary of the following radionuclides that ATSDR had evaluated for the Clinch River Area:

- Cesium-137
- Cobalt-60
- Strontium-90
- Yttrium-90
- Americium-241 (decay product of Plutonium-241)
- Hydrogen-3 or Tritium

Tritium was approximately 99% of the total activity at White Oak Creek. The half-lives, decay types and the critical organs for ingestion were shared. Some of the critical organs were the colon, bone surface, and whole body.

Summary of Radionuclides Evaluated for the Clinch River Area

Radionuclide	Half life*	Mode(s) of decay†	Critical organ (ingestion) ‡	Decay product§
Cesium 137	30.2 y	Beta/gamma	Colon	Barium 137
Cobalt 60	5.27 y	Beta/gamma	Colon	Nickel 60
Strontium 90	28.6 y	Beta	Bone surface	Yttrium 90
Yttrium 90	64 h	Beta/gamma	Colon	Zirconium 90
Americium 241	432 y	Alpha	Bone Surface	Neptunium 237
Hydrogen 3	12.2 y	Beta	Whole body	Helium 3

*The half-life is the amount of time required for 50% of the initial amount present to physically decay. Y = years and h = hours.
†The mode of decay is the principal method whereby the isotope decays or releases energy. In those instances where a gamma mode is listed, this indicates that the decay product releases a gamma ray (photon) as a method of nuclear rearrangement.
‡The critical organ, as defined by the International Commission on Radiological Protection, is that organ receiving the highest radiation dose following an intake of radioactive material.
§The decay product is the first isotope produced during the decay of the parent radioisotope, which is listed in the first column on the left.

Dr. Charp then opened the floor for discussion regarding the particulars of the summary table for the Cinch River area.

Discussion Points:

- Dr. Davidson asked Dr. Charp to explain the difference between beta and gamma decay and their implications. Dr. Charp deferred the question to Dr. Cember. Dr. Cember explained that in beta decay, the energy essentially is absorbed at the site of the deposit of the radioisotope. Most of the gammas leave the body, so they contribute relatively little dose. For example, in the case of iodine-131 and the thyroid gland, of the total radiation dose that is due to iodine-131 being deposited in the thyroid gland, 93% is due to the betas and 7% is due to the gammas. To illustrate that once more, one measures iodine uptake by giving the patient a tracer dose of iodine, and then with an external counter, one measures the gamma radiation that leaves the body. This is done because the gamma radiation leaves the body and deposits very little energy within the body.

- Dr. Charp was pleased with Dr. Cember's explanation and indicated that he did not think there was any other textbook used in introductory health physics other than the one that has been written by Dr. Cember.

- Mr. Box mentioned that alpha radiation was really more important than any of the other kinds of radiation.

- Dr. Cember explained that the concept of dose is really a microscopic concept. Dose is a measure of energy absorbed per kilogram of tissue. The biological effect depends on two things: 1) how much energy is absorbed; and 2) the microscopic distribution of that absorbed energy. When there are alpha particles, a quality factor of approximately 20 is assigned to alpha particles, meaning that 1 rad of alpha is approximately as damaging as 20 rads of gammas. The reason for this is because when the alpha particles deliver energy to the cells, the energy is delivered as ionizations, and these ionizations are delivered very closely together. What the ionizations do is break apart the molecules. When the molecules are broken apart, if they are broken apart very close together, then two broken molecules could combine to form a new toxic molecule. For example, most of the cells are water. Therefore, if 2 water molecules are broken up, and they are very close together, they can recombine as hydrogen peroxide. The hydrogen peroxide then acts as a toxic agent to interfere, for example, with insomatic processes that go on within the cell. Therefore, on a gross model, the radiation damage from alphas is considered much more damaging than that from gamma or beta. A much higher dose is needed of beta or gamma radiation to produce that same closeness of ionization, so that those ruptured molecules will recombine into a toxic molecule. Of course, alpha radiation is not penetrating at all. Therefore, if the alphas come from a source outside the body, they are not even considered. It is only when alpha emitting isotopes are taken into the body, where the isotopes are in intimate contact with living tissues, that there is a concern. Alpha radiation is of concern only from internally deposited radionuclides.

- Mr. Washington asked if betas were not fast moving electrons. Dr. Cember indicated they were fast moving, but they lose their energy much more slowly. The reason that alpha particles are not penetrating is because they give up their energy very quickly. For example,

a 5 MeV alpha particle will give up its energy in about 50 microns of tissue, whereas a 5 MeV beta particle will travel for several centimeters of tissue. The total amount of energy given up by both will be about the same, but for alphas, they will be given up in a much shorter distance, which is why the ruptured molecules can recombine in the case of alphas. Dr. Charp added that another way of looking at it was to consider that a beta particle is very, very small and an alpha particle is huge.

- Mr. Washington pointed out that if ingested, alpha is extremely dangerous to organs. Dr. Charp agreed. An alpha particle is approximately 7000 times more massive than a beta particle. Dr. Cember added that an alpha particle moves very slowly for the same amount of energy. Therefore, it can bump into many more molecules and gives up its energy more quickly.

- Dr. Charp pointed out that Dr. Cember had some very good discussion of those concepts in his textbook.

- Dr. Craig asked if there were any alpha emitters coming down White Oak Creek. Dr. Charp responded that there were not any more. Ms. Adkins reiterated that there were in the past. Dr. Charp concurred that there were in the past. Uranium is an alpha emitter. Some of the plutoniums are alpha emitters. There also are many naturally occurring alpha emitters such as Radium, Polonium, Radon, and Thorium.

Dr. Paul Charp, Presentation Continued
Agency for Toxic Substances and Disease Registry (ATSDR)

Dr. Charp continued his presentation with the current exposure pathways evaluated for the Clinch River area. This area is from the Melton Hill Dam down to the confluence of the Tennessee River. Again, the same type of exposures, ingestion pathways, and individuals also were presented. For example, someone swimming in the lake is not going to swim out there in February, unless he or she is a member of the Polar Bear Club. So, ATSDR chose 1 hour a day for 150 days per year for an adult. A teenager could be 5 hours each day for 150 days per year. Therefore, their exposures would be a bit higher.

Current Exposure Pathways Evaluated for the Clinch River Area

Pathway		Individual	Description of Exposure Situation
Sediment (external radiation)		Teenager	Contact during recreational activities: 5 hours each day for 150 days per year.
Surface water	Swimming (external radiation)	Adult	Contact while swimming: 1 hour per day, 150 days per year.
	Ingestion	Adult	Incidental ingestion while swimming: ingesting 0.1 liters per hour, 1 hour per day, 150 days per year.
Biota consumption	Fish	Adult and child	Eating one 8-ounce fish meal each week for an adult and one four-ounce meal for a child. ATSDR assumed lifetime exposure (until 70 years of age) for a 10-year-old and a 15-year-old child and for a 20-year-old adult.
	Goose liver and muscle	Adult and child	Eating about 1 pound of goose liver and 22 pounds of goose muscle each year. ATSDR assumed lifetime exposure (until 70 years of age) for a 10-year-old and a 15-year-old child and for a 20-year-old adult.

Dr. Charp pointed out the evaluations done for the different scenarios, including biota consumption. ATSDR also took into account the consumption of goose liver and goose muscle for adults and children. Dr. Charp did not know if the numbers were correct, but they have someone eating a pound of goose liver in one year and 22 pounds of goose muscle (light and dark meat) per year. A lifetime exposure until 70 years of age for a 10 year old, a 15 year old, and a 20 year old, up to age 70 was considered.

Next were the estimated radiation doses from current shoreline recreational activities that were based on current dose rates up and down the river. For recreational activities along the shoreline, above Melton Hill Dam, where one would not have any contaminants released in White Oak Creek, they considered the skin, bone surface, and whole body dose from all of the radionuclides combined. Included was Emory River, which dumps into the Clinch River. There is some chance of Clinch River water going up into the Emory River, based on the lake fluctuations. So, there could be a backwash up into the Emory River. The Tennessee River, above the mouth of the Clinch River was evaluated. There could be some water from the Clinch go upriver, into the Tennessee River. Then there were the streams or tributaries leading to the Clinch River, including the smaller streams and the Emory River.

Estimated Radiation Doses From Current Shoreline Recreational Activities

Location	Organ†	Doses (mrem)*		
		Sediment	Surface Water	
		Walking (external exposure)	Swimming (external exposure)	Incidental Water Ingestion
Background Locations				
Above Melton Hill Dam	Skin	0.2	0.49	0.0035‡
	Bone surface	6.0	0.71	0.32
	Whole body	0.4	1.3	0.017
Emory River	Skin	0.14	0.083	0.011‡
	Bone surface	0.16	16	0.011
	Thyroid	—	—	1.5
	Whole body	0.11	2.1	0.11
Tennessee River above the mouth of the Clinch River	Skin	0.19	1.30	0.004‡
	Bone surface	0.046	0.77	0.9
	Whole body	0.0036	0.05	0.0044
Streams leading to the Clinch River	Skin	<0.0007	No Samples	No Samples
	Bone surface	0.062	No Samples	No Samples
	Whole body	0.043	No Samples	No Samples

Some of the background locations included walking, swimming, external exposure, and then incidental ingestion of water. The doses are fairly low. The ATSDR did not have any information on streams leading into the Clinch River for surface water. Much of this information came from the state and some of it came from the DOE. Dr. Charp pointed out that ATSDR

does not yet know about compromised immune systems or about non-cancer health effects. He then opened the floor for discussion.

Discussion Points:

- Dr. Cember asked how these numbers compared to the background dose, for example, if someone was not walking along the river. How much less of a dose would a person obtain from ordinary background radiation? Dr. Charp responded that these doses are above background, if one assumes that the standard background dose rates, not including radon, are approximately 100-120 millirem per year. He clarified that these dose estimates were for 70 years. Dr. Cember explained that one would add $1/70^{th}$ of that onto the 100 millirem.

- In response to an inquiry from Mr. Washington, Dr. Charp explained that the dose was lower than in Colorado.

- Mr. Hill asked what the background was at Melton Hill Lake, in the Clinton area, upstream from White Oak Creek. Dr. Charp indicated that the nominal background across the country, not including radon, averages approximately 100-125 millirem per year. If looking at regional areas, Denver can be as high as 600 millirem. It depends on the outcrop. If there is not a lot of soil, exposure could be higher. For example, in some parts of Scarboro some Conasauga shale areas can be seen. In those areas, the dose rates could go up based on the Uranium and other exposures

- Ms. Adkins reminded the group that Ms. Johnson Stokes presented information about large and multiple fish kills. She said she realized those fish kills could be from any of the contaminants or from temperature changes. However, the fish kill that Ms. Johnson Stokes discussed was not at a time of drastic temperature changes. Ms. Adkins wondered, if there was something in the water that was strong enough to kill thousands of fish, what that substance was doing to the people drinking the water. She said that was the part she had trouble accepting. She knew that several people in the room would be raising their eyebrows, but people in the community have seen these huge fish kills and they have seen their neighbors and family members become quite sick. They have seen laboratory results that show people have cesium, strontium, cadmium, nickel, and other substances in their bodies. Yet, everyone says that the exposures are not enough to cause any problems. It is difficult to trust the data and go out into the community and say with any confidence, "Sure, here is all of this stuff in the water, but it does not really cause any problems." If it kills fish, and if it shows up in your body fifty years later, and you have Multiple Sclerosis, Lupus, Parkinson's Disease, cancer, or another disease, then it seems that there could be a correlation that no one is finding by picking out the tiny bits of substances. Perhaps it is the weakened immune system that is involved. Dr. Melinauskas responded that it depends on the contaminant in the water. For example, chlorinated drinking water will kill fish.

- Mr. Box stated that during the 1950s and the early 1960s, K-25 went through a series of high treatments of copper and other chemicals to treat the cooling tower. Many of these treatments were flushed down through the Clinch River, which could account for fish kills at

that time. There were so many other chemicals put into the river, that no one may ever really know the extent of the damage.

- Mr. Hill pointed out that when he fish tournaments, on all of the ORR area lakes and at certain times he would see fish kills. Also, he would see deformed and diseases fish in all of the lakes. On the other hand, Dr. Cember added that in Minamata Bay, Japan, where approximately 100 people died from mercury poisoning and hundreds were terribly deformed, there were no fish kills as a result of the mercury discharged by the plastics plant there. Fish kills are not always a good indicator of potential harm to people.

- Mr. Washington pointed out that Ms. Johnson Stokes was one of the original members of the site-specific advisory board, and she was talking about doing these kinds of studies ten to twelve years ago, when the site-specific advisory board was first created. She has a compendium of all of this information, even before the DOE decided they were going to release some of the information. She obtained the information from some of the people who were working at these facilities. Some of them already have died. He suggested that the ATSDR not forget that she had that information.

- Ms. Adkins asked again if there are no harmful health effects, then why metals such as cesium, strontium, and nickel were showing up in peoples' bodies, and why there is such a high incidence of disease. Dr. Charp responded that cesium, strontium, nickel, and others are in everybody's body, even outside of White Oak Creek or Oak Ridge. People who have never been to Tennessee themselves will have these in their bodies, because they are fallout products, and there is also a naturally occurring uptake of these non-radioactive trace metals in the body anyway.

- Ms. Adkins pointed out that these metals are appearing in people's bodies in this community at extremely high, toxic levels. She was not worried about trace levels, but on lab reports, people are getting red flags saying "highly elevated." That is a common problem in this area that has not been addressed. Dr. Cember responded that nickel is a naturally occurring element and nickel-60 is also the decay product from cobalt-60. However, on a mass quantity and in terms of ordinary toxicology, an enormous amount of cobalt-60 would decay to such a tiny amount of nickel on a mass basis, in non-radioactive nickel, that he did not think that the nickel that results from the decay of cobalt-60 would even be detectable by any means.

- Dr. Charp indicated that he had a spreadsheet that actually has the specific activities, and that they could look at that in a few minutes.

- Dr. Cember said he did not remember the number exactly, but the specific activity of cobalt-60 is very high. Dr. Charp concurred, indicated that it was approximately 11 milligrams per curie. Dr. Cember added that when that decayed, there would be 11 milligrams of nickel-60. When that is dispersed into enormous quantities of water, he thought it would be essentially undetectable by most means.

- Mr. Washington pointed out that they did a lot of nickel-plating in these facilities, and whenever they emptied their tank, they emptied it directly into the water. Dr. Cember concurred and indicated that was something else altogether. He was talking only about the decay product of cobalt-60. Mr. Washington added that also, in the cooling tower itself, to prevent bacteria growth, they put a chrome base compound. Again, that was emptied directly into the streams.

- Dr. Davidson said that something that may help people to understand these things would be if, included in this document, was a table showing the half-life of these radionuclides. Then people could understand the residence time in the body, and whether these radionuclides are going in and coming out or accumulating in the body over a long period of time. Such information also would help because there were some periods of time during which very high levels of these contaminants were released into the streams, and it would be helpful to know whether people are still within the first half-life or beyond that. Then people might understand that when they see these radionuclides in their body now, they might have resulted from exposure some time in the past.

- Dr. Charp guessed that most of the lab results that Ms. Adkins was bringing up were straight chemical analyses. Therefore, they would not necessarily know whether or not the metal was strontium-90 and so forth. Otherwise, they would have a bigger problem on their hands with the mixed waste. However, he said he could add in that table to show both the physical half-life and the biological half-life, and then the effective half-life when one combines the two.

- Mr. Box said that the presence of nickel in the area was really not surprising in that tons of Nickel powder was processed at K-25 in the 1950s and 1960s, plus the fact that there were experiments going on where scrap nickel was converted to nickel carbonyl, which is highly toxic. Dr. Cember agreed that nickel carbonyl is a powerful carcinogen. Mr. Box added that Nickel Carbonyl disintegrates very easily to nickel powder and floats around in the air. He said he was in charge of disposing of many chemicals around K-25 in the 1950s, and he disposed of a few gallons of nickel carbonyl just by pouring it into rocks, down a big cliff. So, nickel in the contents of samples in the area is not surprising at all.

- Mr. Hill asked Dr. Charp to back up, because the group kept talking about all of the other chemicals and all the other locations and where they came from, but his understanding when he first read the PHA of concern was that they were discussing Oak Ridge National Laboratory (ORNL), White Oak Creek, and the Clinch River with regard to radionuclides. He wondered if that was all this document discussed and whether all of the other chemicals and materials would be addressed later. Dr. Charp affirmed that the PHA of concern discussed ORNL, White Oak Creek, and the Clinch River, with regard to radionuclides. The rest of the materials would be addressed at a later date.

Dr. Paul Charp, Presentation Continued
Agency for Toxic Substances and Disease Registry (ATSDR)

Dr. Charp continued his presentation with the estimated doses from the current consumption of fish (Table 20/Slide 14). The table included fish such as: Channel catfish, large-mouthed bass, striped bass, catfish, and sunfish. The table includes fish caught in the Tennessee River, below the confluence with the Clinch River and the Clinch River, below Melton Hill Dam, between Clinch River mile 0 and Clinch River mile 23-24, and Tennessee River, from Clinch River Mile 0 down to Watts Bar.

Estimated Radiation Doses From Consumption of Fish (Current)

Location	Fish Species	Organ†	Dose (mrem)*		
			Adult	15-year-old	10-year-old
Tennessee River below the confluence with the Clinch River	Channel catfish	LLI	2.13	2.65	4.07
		Whole body	0.99	0.818	1.01
	Largemouth bass	LLI	1.20	1.38	1.89
		Whole body	0.71	0.48	0.506
	Striped bass	LLI	0.74	0.769	0.839
		Whole body	0.56	0.31	0.26
Clinch River below Melton Hill Dam	Catfish	LLI	98.4	52.2	60.3
		Whole body	89.3	68.5	58.8
	Channel catfish	LLI	55.5	29.2	33.2
		Whole body	41.0	23.2	20.1
	Largemouth bass	LLI	109	57.2	63.8
		Whole body	82.1	45.8	39.2
	Striped bass	LLI	1.64	1.03	1.59
		Whole body	0.75	0.62	0.78
	Sunfish‡	BS	4.65	114	71.7
		Whole body	3.15	4.94	4.08

* The doses are expressed in mrem calculated from age of intake to age 70. For example, the intake for an adult occurs at age 20 and continues for 50 years.
† Doses are presented for the organs receiving the highest radiation doses. LLI is the lower large intestine and BS is the surface of bone. The whole body value is the radiation dose delivered to the body by the detected radionuclide.
‡ The doses for sunfish are based on dry weight samples; all other doses are based on wet weight samples.

The organs involved are the lower large intestine, the whole body, and bone surface in adults, 15-year-olds and 10-year-olds. The table shows doses that an individual would receive up to age 70. The highest dose was in the lower large intestine. If an adult eats a large amount of large-mouthed bass, they would receive a dose of approximately 110 millirem up to age 70. The lower large intestine would be someone who would be ingesting radionuclides such as Strontium, Cobalt, and Cesium. The residence time would be irradiating and then going to the other organs. Again, at the Clinch River below the Melton Hill Dam, if one caught most of one's fish from the Tennessee River on down to Watts Bar, one's dose would not be high. Dr. Charp opened the floor for questions regarding this Table.

Discussion Points:

- Dr. Cember pointed out the very bottom line of the table, which said that the doses for sunfish are based on dry/wet samples and others are based on wet weight samples. He asked if those were samples of the entire fish (e.g., Did they grind up the entire fish and measure the activity or did those figures include only the edible portion of the fish?). Dr. Charp responded that sunfish are quite small, so he thought that they measured the doses in the entire fish.

- Dr. Cember suggested that those measurements would be overestimations because people do not ordinarily eat fish bones. He added that mercury concentrates in the edible portions of fish, but strontium-90 concentrates in the bone of the fish. Therefore, one could come to erroneous conclusions, depending on whether one analyzes the edible portion or the inedible portion.

- Dr. Joseph explained that in the early days, in the 1950s, a small commercial industry of perch on Watts Bar netted perch and took the whole fish and ground it up into fish patties. These patties went to two small communities; one in New York and one in Chicago. Mr. Hill added that this practice was still occurring in the local area. Some people still make fish patties out of the whole fish.

- Dr. Malinauskas asked how far below the actual Melton Hill Dam the charts referred to, because he knew that one of the favorite fishing spots was just below the dam. Dr. Charp responded that the ATSDR has samples based on river mouths. He combined all of the river mouths, realizing that some fish are quite territorial. For example, fish that may concentrate around Jones Island may not go down as far as Grassy Creek or further on down. Therefore, in a way, the information on this table is a bit misleading because it takes into account all of the fish. The information could be broken out by number of fish at each individual sampling location.

- Dr. Malinauskas pointed out that one of favorite fish just below the dam is sauger, which he did not see on the chart. Dr. Charp responded that they had no sauger samples. These fish on the table are the only ones for which they had samples. Dr. Malinauskas pointed out that they must not have sampled right below the dam because there were sauger there.

- Mr. Washington asked if they did not become more sophisticated in later studies, so that they knew exactly what elements were going to be concentrated in what parts of the body. Dr. Davidson indicated that she was not involved in the fish sampling work. Dr. Charp asked if Mr. Washington meant if they looked at specific organs of the fish. Mr. Washington affirmed that this was what he meant. Dr. Charp responded that they did look at specific organs of the fish, but it depended on the study.

- Gordon Blaylock pointed out that, depending on the type of the study, if they were looking at the entire fish, they might have ground up everything. If they were looking at the edible portions of the fish, they would take a fillet and analyze that.

Dr. Paul Charp, Presentation Continued
Agency for Toxic Substances and Disease Registry (ATSDR)

Dr. Charp then moved to the summary of the public health implications from ATSDR's evaluation of past and current exposure to radionuclides released to the Clinch River/Lower Watts Bar Reservoir, noting that this information came from the Red cover. With regard to past exposure from 1944 to 1991, from fish consumption, drinking water, milk, eating, and walking along the sediment, the Task 4 study found that there was not a health problem and that the estimated organ-specific radiation doses from consumption of Clinch River fish were well below organ doses of 25,000 millirem. Dr. Charp explained that someone has to have an organ dose of 25,000 millirem before some type of health effect is seen, and all of the doses were below 25,000. For example, doses were 810 millirem to the bone, for the Jones Island areas, and 240 millirem to the female breast, and so forth. These doses were well below the 25,000 millirem which was the Task 4 Study's upper limit. Similarly, for drinking water and milk, they said the external, organ specific doses were less than one to approximately 110 millirem, and that they were below a factor of 1.1 to 8, depending on the organ.

Summary of Public Health Implications From ATSDR's Evaluation of Past and Current Exposure to Radionuclides Released to the Clinch River/Lower Watts Bar Reservoir

Exposure		Notes	Was/Is There a Public Health Problem?
Time Frame	Pathway		
Past 1944 to 1991	**Fish Consumption**	**The estimated organ-specific doses from consumption of fish under maximum exposure conditions ranged between 240 mrem to the breast and 810 mrem to the bone. Individuals receiving these doses ate 1 to 2.5 meals a week of fish caught at Jones Island, near the mouth of White Oak Creek (see Table 16). Doses were lower for people who ate fewer fish or fished further downstream.**	**No--All estimated organ-specific radiation doses from consumption of Clinch River fish are well below organ doses of 25,000 mrem, which are known to cause human health effects.**
	Drinking Water and Milk Eating Meat Walking Along Sediment (External Radiation)	**The organ-specific radiation doses from external radiation range from less than 1 to 110 mrem. These doses were lower by a factor of 1.1 to 8, depending on the organ, than the doses incurred by the people who ate frequent fish meals caught at Jones Island.**	**No**

Regarding fish Consumption, walking along the sediment, surface water, swimming, and so forth, all of these doses were below either the 25,000 millirem limits or below ATSDR's screening values of 5000 millirem over 70 years or below ATSDR's minimal risk level for external doses. In the case of food ingestion, the ATSDR considered the FDA protective action guide of 500 millirem per year. Every dose was below those values. Everything was okay with the current levels.

Summary continued

Exposure		Notes	Was/Is There a Public Health Problem?
Time Frame	Pathway		
	Lower Watts Bar Reservoir		
Current 1988 to Present	**Fish Consumption**	**An adult or child eating fish from the Lower Watts Bar Reservoir is estimated to receive less than 6 mrem of a whole body dose in a year. For both an adult and a child, the estimated radiation doses are well below the Food and Drug Administration's protective action guides of 500 mrem (whole body) and 5,000 mrem (organ-specific).**	**No**
	Walking Along Sediment (External Radiation)	**The estimated annual dose to the whole body is less than 15 mrem/year from contact with surface sediment and less than 20 mrem/year from contact with deep channel sediment. The estimated doses are 5–6 times lower than ATSDR's chronic-duration external exposure MRL for ionizing radiation of 100 mrem/year.**	
	Surface Water: Swimming (External Radiation) and Ingestion	**The estimated annual whole body dose to a child from external exposure while bathing or swimming in Lower Watts Bar Reservoir water is less than 0.05 mrem/year—2,000 times lower than ATSDR's chronic-duration external exposure MRL for ionizing radiation of 100 mrem/year. The estimated dose to a child from drinking unfiltered water is less than 0.25 mrem/year. The total dose from waterborne exposures was estimated at less than 0.30 mrem/year.**	

Dr. Charp opened the floor for discussion regarding this portion of his presentation.

Discussion Points:

- Dr. Davidson asked if they summed all of the exposures from route of exposure. For example, everything that could be ingested, whether it was fish, water, or milk, was that added together?

- Dr. Charp responded that they did sum those. The fish was the overriding limit. A person may have only added 1 or 2 millirem, at the most 10. So, everything would still be fairly low.

Dr. Paul Charp, Presentation Continued
Agency for Toxic Substances and Disease Registry (ATSDR)

Dr. Charp next addressed the public health concerns. In 2001 and 2002, ATSDR compiled more than 1,800 community health concerns obtained from ATSDR/ORRHES community health concerns comment sheets, written correspondence, phone calls, newspapers, comments made at public meetings (ORRHES and work group meeting), and surveys conducted by other agencies and organizations. These concerns were organized in a consistent and uniform format and imported into a community concerns database by Ms. Melissa Fish at the ATSDR's Oak Ridge office. The community health concerns addressed in this PHA are those concerns in the ATSDR Community Health Concerns Database that are related to issues associated with radionuclide releases from White Oak Creek.

Dr. Charp highlighted examples of some of these concerns, which are all direct quotes from ATSDR's database. He stressed that these comments had not been wordsmithed by the ATSDR or by anyone else. These are how the comments were received by ATDSR. All of the following concerns are listed in the PHA, along with ATSDR's responses:

- "My first thoughts are what are the routes of entry, what are we looking at from the waterway, from the airway, from the soil. Because if you are talking about the water and fisherman and residents you're talking downstream. But if you're talking wind, I don't know where that ends. I would like to hear what are you're thoughts are on what routes are we looking at. That would expand it even further if you look at sports men and the hunting migration."

- "I had some questions about your study of the hundred and sixteen people in the southern Watts Bar area. I don't know if I am being premature in my questions to you, but did you all come to the conclusion that there was no danger from eating the fish for anything other than PCBs, when that was the only thing you tested for?"

- "If your testing was accurate and your conclusions were accurate, why hasn't something changed so far as all of those fish advisories?" (Dr. Charp noted that was the state's responsibility).

- "I don't think the community would mind if you had an advisory on don't eat the turtles."

- "A subcommittee member asked whether, since vegetables and fish are dominant pathways, people who live downstream are at higher risk?

- "Was any analysis done of the game living on the reservation?"

- "People, actually, some of you might kind of take this lightly, but a lot of people in Oak Ridge feel this same way, a lot of people in Oak Ridge don't drink Oak Ridge water. They buy water. They don't drink Oak Ridge water." (Dr. Charp pointed out that companies put the Oak Ridge water into a bottle and sell it as bottled water and people buy it. He added that the regulations for bottled water are less than the regulations for tap water. In fact, there are none).

- "A community member said there are a couple of other dimensions that will complicate matters but she hopes they will be considered. One is the time frame. The workers and residents who lived nearby in the 50s and 60s had different exposures than now and will have different symptoms now. Also, geographically, the flow of water, the underground aquifer, that sort of thing. The two dimensions are geography and time will complicate this and shouldn't be overlooked. There may be people who lived in different locations and the well water was of different composition." (Dr. Charp indicated that the time concern has been addressed in the PHA).

- "The problems of the buried waste include little documentation on low-level waste, and that the X-10 records on high-level waste were destroyed in 1984. Some were reconstructed, but in general that is not an accurate inventory. That makes more important the good records of the outflows off the reservation."

Dr. Charp opened the floor for discussion with regard to the community members' concerns.

Discussion Points:

- Mr. Lewis thought that it was interesting that one of the concerns mirrored one of Ms. Johnson Stoke's concern, and there is a response in the body of the PHA. It was his opinion that when someone asks a question and that issue has already been captured and addressed, it should give people more confidence in the process.

- Dr. Malinauskas announced what he called Malinauskas' Theorem: Nobody keeps good records of what they throw away.

Dr. Paul Charp, Presentation Continued
Agency for Toxic Substances and Disease Registry (ATSDR)

Continuing, Dr. Charp explained that the levels of radionuclides released from the White Oak Creek to the Clinch River and to the Lower Watts Bar Reservoir in the past would not result in harmful health effects for either adults or children who had used, or might continue to use, the waterways for recreation, food, or drinking water under most exposure situations. As a federal agency, the ATSDR has formally categorized those situations as posing "no apparent public health hazard" from exposure to these contaminants. Dr. Charp said that he was aware that there had been some concern at the last ORRHES meeting regarding the wording "no apparent." That was why he had formally characterized the phrase in quotations. The ATSDR uses the ***no apparent public health hazard*** category in situations in which human exposure to contaminated media might be occurring, might have occurred in the past, or might occur in the future, but where the exposure is not expected to cause any harmful health effects.

The operative word is "expected," because currently, the only thing that is clearly expected, other than some very rare cases from exposure to radionuclides, is cancer. So far, the rare cases are in the studies coming out of the atomic bomb survivors. They are starting to see things like cardiovascular disease, based on epidemiology. In other words, the only health effect that has been directly correlated to radiation exposure is cancer. They are still investigating things like autoimmune diseases. Dr. Charp said he would not say that these effects were not going to occur, but ATSDR does not expect them based on current information. However, the ATSDR is keeping an open mind.

In conclusion, the ATSDR believes that the actual risk of developing disease or cancer is small, if it exists at all, for people who ate fish from the Clinch River. The Task 4 report concluded that these doses and the associated risks were below levels of public health concern. Based on its evaluation of the Task 4 report, the ATSDR concurs with this conclusion. Therefore, the

ATSDR considers past exposures associated with sediment, surface water, and food to pose *no apparent public health hazard*. Further, the ATSDR considers current exposures associated with the detected levels of radionuclides in sediment, surface water, and game to pose *no apparent public health hazard*. The floor was open for concluding discussion on Dr. Charp's presentation.

Discussion Points:

- Dr. Charp asked Mr. Box if the wording of the first concluding statement that "the actual risk was small, if it exists at all" was better than the one in the PHA. He indicated that Mr. Box had raised a question with regard to the PHA as to how the agency had stated the risk issue. Mr. Box thought it sounded better.

- In the context of communication to the public, Dr. Cember thought they should change the word "risk" to the actual "chance" of developing disease. He had done a survey of his own with his friends who are not health physicists and who are community members, and when he asked them what they thought about when he used the word "risk," they unanimously said, "an immediate threat to life or limb." That is the picture that is conjured up in peoples' heads. What health physicists really mean when they say "risk" is the probability of getting something, and it does not matter whether the probability is 10^{-10} or a certainty. Therefore, he suggested that the document say the actual "chance" of developing disease, which is what most people would understand.

- Dr. Malinauskas pointed out that, mathematically, risk approaches zero ascentotically. So, one cannot ever say that risk is zero. Dr. Charp responded that some of the Environmental Protection Agency (EPA) documents do say that the risk may be as low as zero. Dr. Davidson added that if there is no exposure, then there is no risk. So, there could be zero risk, because in order to have a risk one has to have exposure. Dr. Malinauskas reiterated that it approaches zero ascentotically.

- Dr. Charp stated that the question then is: What is the definition of zero? Dr. Charp indicated that the bottom line is that the ATSDR considers past exposures associated with sediment, surface water, and food to pose no apparent public health hazard, based on current knowledge.

- Mr. Lewis asked if the ATSDR would have to go through a huge approval process to change the word "risk" to the word "chance." Dr. Craig pointed out that the legal issues were with the last four or five words. Dr. Charp responded that they could change the sentence to read "actual chance," but they could not change the "no apparent" part.

- Dr. Davidson thought that the ORRHES had asked if the ATSDR would provide a narrative along with their official conclusion. She explained that narrative part would be the rest of that paragraph, which would explain the official conclusion and what it all means.

- Ms. Sandra Isaacs added that ATSDR was required to put in the words "no apparent public health hazard," but that should never be in and of itself a category. In other words, there should be a clear explanation of what that means. Certainly, if the word "chance" is better to

explain that than "risk," then that is something that the ATSDR can consider. She also thought that was a good suggestion and very much appreciated community input. ATSDR certainly wants the community to be able to read the narrative and know what the "no apparent public health hazard" means to them.

- Dr. Malinauskas said that the ATSDR study relies very heavily on the ChemRisk document. He asked if ChemRisk calculated dose without regard to health effects and if they did consider health effects, what their conclusions were. Since ATSDR and ChemRisk were both looking at the same data, he wondered if both organizations came to the same conclusion. Dr. Charp replied that one of the quotes in the Task 4 Report was that they did not expect to see any adverse health effects. They even state that they thought the levels would be below levels that could be detected by an epidemiological study. The ATSDR's evaluation was based on how ATSDR reviewed the current literature and doses associated with adverse health effects. Therefore, there is a slight difference in the two approaches.

- Mr. Washington said he heard at a conference in Arizona two years ago that Canada had some problems with a ChemRisk assessment, so much so that they decided to not even use the ChemRisk assessment, even though they had been paid. At that time, the word went out that they would not exclusively use the ChemRisk data. Dr. Charp replied that the ChemRisk data was used for the past analysis. For the current analysis, from 1990 to the present, ATSDR used the quality control data from the Oak Ridge Environmental Information System and information received from the Tennessee Department of Environmental Conservation (TDEC), the Tennessee Department of Health, the TVA. Federal, state, and regional data were utilized.

- Mr. Jack Hanley pointed out that ATSDR had the ChemRisk report technically reviewed, and the material was presented last spring or summer. Dr. Charp added that the technical reviewers actually said that the ChemRisk data was not the best, but it was good enough for public health issues.

- Mr. Hill asked why the PHA was supposedly dealing with contaminants that came from the ORNL through White Oak Creek into the Clinch River, and then the numbers include everything that was released where the Clinch and the Tennessee meet. Dr. Charp responded that one issue was that if someone only looked at what was released from White Oak Creek, they would only be looking at a few compounds such as tritium, some plutonium, some uranium, cesium and strontium. By the time it gets down to K-25, contaminants have been added into the mix. So, how does one differentiate between K-25 and White Oak Creek? This cannot be differentiated unless they look at only the specific isotopes that were unique to White Oak Creek. By the time they get down lower, they have to worry about any type of materials, like the fly ash from the K-25 and Kingston steam plants, because that is going to be releasing radionuclides into the environment. In those cases, there would be mostly uranium, radium, and a few other things. If the study only concentrated on White Oak Creek, ATSDR would be doing the public an injustice by not looking at the rest of the water.

- Mr. Hanley pointed out that when the state conducted their screening evaluation to determine the feasibility study for dose reconstruction, the White Oak Creek releases were at a higher risk level. That is why there is a focus on White Oak Creek. He thought that the past analysis used for the ChemRisk was a modeling exercise, where they estimated what was released and modeled what those exposures and doses would have been. So, the past is estimated just on what came out of White Oak Creek, while the current analysis is based on actual data. With respect to the actual data, when looking at the products in the fish in the last ten years, no one can say which ones came from White Oak Creek. The reason there is some confusion is because the past was modeled and provided estimates for what might have been released into the river.

- Mr. Hill still thought they were comparing apples and oranges for the current doses. They begin with a report saying that they were going to look at White Oak Creek, but the numbers are for everything. Dr. Hanley agreed.

- Dr. Charp pointed out that for K-25, they ruled out many of the radionuclides other than uranium and neptunium, which was not released from White Oak Creek. Tech-99 was a big issue, as was K-25, but not at White Oak Creek. So, there is not a complete overlap in the numbers.

- Mr. Hill also observed that in the document, on page 34, line 18, it says that in 1963, a facility, the old hydrofracture, was built for low-level radioactive waste disposal. The reference indicates that between 1963 and 1980, radioactive waste was combined with grout and inserted 1000 feet below ground, into 5 underground storage tanks. Mr. Hill did not believe that there were any underground storage tanks 1000 feet down.

- Dr. Craig explained that the way the hydrofracture works is that they put water under tremendous pressure, open up a piece of the shale, and shoot water through it, followed by grout. The grout then sets up and hardens. The shale then has no water coming through it and the waste is removed from the environment, 1000 feet down. This was a great technological breakthrough in 1963, one that Ed Struxness took a great deal of credit for. This was the way he attempted to keep the waste out of White Oak Lake. It was a real boon to the environment at the time. Later, they found out the technology was not quite as good as they thought it was.

- Dr. Charp clarified that the tanks are not really engineered tanks, and confirmed that the wording needed to be clarified. Dr. Cember pointed out that technically they were tanks, but they were not manmade tanks.

Public Comment Period

Following a short break, Dr. Davidson announced the start of the public comment period and asked if anyone would like to speak. She reminded those who came forward to give their names and speak clearly into the microphone.

Dr. Gordon Blaylock
ORR Community

Dr. Blaylock said he did not know whether ChemRisk still existed, but SENES, Oak Ridge was a subcontractor to ChemRisk, and much of the data that was put together for the Task 4 Report was put together by SENES Oak Ridge, himself, and others. Therefore, most of that data came from reliable sources. Secondly, to straighten out some confusion about the Clinch River, Melton Hill Dam, and White Oak Creek, he explained that White Oak Creek is located at mile 20.8 from the confluence of the Tennessee River and the Clinch River. Melton Hill Dam is at approximately mile 23. Melton Hill Dam was not constructed until 1962 and was impounded in 1963. Therefore, there was a much different type of riverine system below the dam. The same amount of water usually came down the river each day. Melton Hill Dam was a peaking unit, which means that in the morning and in the evening, when there was power demand, they released water to turn the turbines. So, there would be a large flush of water moving down the Clinch River at those times. That changed all of the sediment in the Clinch River. Prior to 1963, there was a large release into White Oak Creek. White Oak Lake was drained in 1955, and as a result of heavy rains in 1956, about one-third of the sediment in White Oak Lake was washed out. Much of this sediment was deposited in White Oak Creek, and each year it would be buried and was several centimeters down.

In 1963, when they started operating Melton Hill Dam, someone could be at the mouth of White Oak Creek in a boat, and when the turbines were turned on, they would go all the way up to the dam on White Oak Creek. So, there was a flushing action, which started carrying all of the radioactivity out. That is why the Calva Sill Dam (sp) was constructed in 1990 as an attempt to keep most of the radioactivity in the sediment from flushing out of the creek. Prior to 1963, when there was a release from White Oak Creek down the Clinch River, most of it was dropped out around Grassy Creek, at approximately mile 14, because that is where it became more like a lake than a river.

Dr. Blaylock indicated that tritium was no problem. If tritium is released over White Oak Dam, it is at about 500 picocuries per milliliter. When it gets to the Clinch River, it is below drinking water standards, which is the reason it was not considered in the dose reconstruction, because there is no dose from drinking water. Dr. Blaylock explained that hydrofracture was a process that was taken from the oil industry. When they wanted to get oil where there was not a large pool of oil, they would pump slurry down and fracture the shale. It shale is thin. After the shale was fractured, they would pump in the radioactivity waste, which was contained in a slurry. It was a great technique. The problem was that some engineers decided that they would save money by changing the slurry that they were pumping down into the fracture. When they did that, they began to have releases of radioactivity.

With respect to the effects of radiation on fish, Dr. Blaylock said that there has never been enough pollution in the Clinch River or White Oak Creek to kill fish, which would require at least 2000 rad. There has never been that much acute radiation in the water. Also, the amount of cesium, strontium, and cobalt in fish in the Clinch River is very low. The calculated dose from eating fish is not significant.

Discussion Points:

- Mr. Washington asked Dr. Blaylock if he was saying that dilution is a form of pollution abatement. Dr. Blaylock indicated he was not saying that.

- Dr. Davidson asked if they used hydrofracture in the ORR area. Dr. Blaylock replied that hydrofracture was done in the ORR area. It was considered a great technique for a long time, and it would have still been a great technique if they had not changed the slurry.

- Ms. Adkins asked Dr. Blaylock if he would repeat what he said about the water below a certain point being so bad that no one drinks it anymore, so it was not counted in the sampling. Dr. Blaylock responded that he did not say that.

- Ms. Adkins stated that she thought she heard him say that water below a certain landscape is not drinkable and therefore not counted in your sampling. Dr. Blaylock clarified that he had said that the tritium released was below drinking water standards, which is 20,000 picocuries per liter. That means that if there are 20,000 picocuries per liter, that is considered a safe drinking water standard for tritium. If 500 picocuries (a picocurie is 10^{-12} curies) were released, and if one released 500 picocuries per milliliter over the dam, that would be 1000 liters. So, that is a very small amount. By the time it is diluted in the Clinch River, it is below drinking water standards.

- Mr. Washington pointed out that was the basis for his question. He wanted to make sure that Dr. Blaylock was not saying that dilution is a form of pollution abatement. Dr. Blaylock replied that he was not saying that, but that was a fact. They got it below the standard because of the amount of water in the Clinch River.

- Mr. Manley asked if Dr. Blaylock was talking about radioactive contaminants. He noted that there was a time that there was an antifreeze problem at X-10. The antifreeze was dumped into the stream that runs between 4508 and HTML, so therefore, there were some problems with fish and wildlife. Dr. Blaylock indicated that he was referring to radionuclides. There are several fish kills on the East Fork Poplar Creek every year that usually can be traced back to some chemical pollutant such as antifreeze or other types of city contamination.

- Ms. Adkins asked Dr. Blaylock to discuss the contaminants that were dumped, which sank into the rock, crevices, underground water, and the porous limestone formations under the ground that are easily eroded. Dr. Blaylock explained that he thought there was only one plume that went off of the reservation, out of Y-12. He was not sure of any others. He did not think there would be any crossing the river either.

- Ms. Adkins reiterated that she was talking about all of these things that were buried that might have seeped down and affected the underground water. Dr. Blaylock replied that he did not believe that it had gotten off of the reservation. He asked the rest of the group if they knew of anything.

- Dr. Craig stated that seepage into underground water is a contaminant of concern, and there will be a PHA on groundwater contamination. ATSDR will look carefully at that.

- Dr. Cember said that, in terms of the usual notions of speed, groundwater flow is very slow. A groundwater flow rate of several feet per year is fast. So, if it was dumped on the reservation, depending on how far the border of the reservation is from the drinking water in the wells, it would take a very long time for the contaminant plume to flow out. Also, depending on what the half-life of the radionuclide is, most of it, or at least some of it, may decay away before it reaches where it is accessible to the public.

- Ms. Adkins said she would probably not cause as much trouble at meetings once the group obtained a map where they could actually mark where substances were dumped in the 1950s, so that she can see whose wells it was near and where it went. Dr. Davidson said she hoped that they would be able to see those maps when Mr. Hanley sent them to the field office.

- Mr. Hill asked the DOE to provide the ORRHES with any current activities that they have contracted out to look at the migration of groundwater and the issues that Ms. Adkins had been discussing. If the DOE is working on anything currently to monitor or investigate the migration of the things that have been buried or injected into the ground, it would be helpful to distribute that information to the ORRHES. Dr. Joseph of the DOE stated that he would be glad to provide those items.

- Dr. Craig pointed out that the ORR is punched full of several thousand holes. It is a tremendously complex hydrogeology. Many imminent hydrogeologists have made careers of this area, and he thought it would be quite interesting to have one of them speak on the issue of the geology, karst flow, and how it was made.

Ms. Adkins
ORR Community

Ms. Adkins said that since they had a few minutes left in the public comment period, she would like to share some information with the group. She had brought two copies of the map to which she kept referring. She said the map was her informal effort to try to figure out what was going on in her community, with the people she grew up around. When she lived in a suburb of Atlanta called Snellville, Georgia, she went to a doctor who suggested that she look at what was happening to women who lived around her when she grew up. So, she started tracking that information when she still lived in Snellville, Georgia. "Everybody is somebody in Snellville" is the city's motto. Meanwhile she and her family have moved back to Tennessee.

Ms. Adkins passed around her map, indicating that there were 14 families around her cove near the golf course. They have turned the land into a golf course and they have sold the land for nice expensive homes now. Some of the ORRHES members may live in those homes. It was in a spring-fed area. She pointed out that the dots on the map represented women who lived in this neighborhood when she was growing up in the 1950s and 1960s. The red dots represented cancer. The green dots represented severe birth defects. The yellow dots represented bizarre things no one could explain. The blue dots indicated neurologically related problems such as Lupus, Multiple Sclerosis, and Parkinson's Disease. One map showed the limestone slabs, and she showed the group where to look so that they could see what limestone slabs her neighborhood shared with some of the places that being discussed in the ORRHES.

Vote on the ORRHES Recommendation Submitted by the NAWG

Motion

Ms. Donna Mosby moved that the ORRHES recommend that ATSDR adopt the Proposed Plan for Collecting Information about the ORR Community Suggested Timeline that is outlined as a process to fill the gaps that were left behind after the George Washington University study. This will be an opportunity for ORRHES members to sign up and participate themselves and/or identify individuals in the community who might be wiling to help carry out the plan. Dr. Bob Craig seconded the motion. The motion carried: 13 in favor, 0 opposed, 0 abstentions.

Discussion Points:

- Dr. Davidson indicated that the recommendation would be submitted to ATSDR.

- Ms. Mosby reminded the group that the recommendation offered people the opportunity to participate at their levels of comfort. Also, the ORRHES can have great influence on the timeline with the level of participation. Ms. Mosby shared a sign-up sheet on which she indicated ORRHES members could sign up to help or suggest other people who might be interested in participating in the process. She noted that although the sheet had a space for phone number, people could put their e-mail addresses instead. The sign up sheet was for the four categories of: Reviewing Existing Reports, Key Resources, Literature Review, and Focus Groups. She said that someone from the DHEP would be working along with everybody on the different tasks.

Dr. Davidson then requested that the Work Group Chairs deliver the remainder of the Work Group Reports.

Public Health Assessment Work Group Report

Dr. Bob Craig
Chair, PHAWG

Dr. Craig indicated that the PHAWG had met twice since the last ORRHES meeting. On December 15, 2003, the work group heard a presentation from Dr. Allan Susten entitled, "ATSDR Public Health Assessments—A qualitative, Evidence-based Public Health Decision Tool." This excellent presentation outlined the similarities and differences between the ATSDR PHAs and the EPA's Site Specific Risk Assessments (RAs). The primary difference between the two is that the PHAs make a determination about the impact of sites on public health and identify public health actions, whereas the RAs make a determination of acceptable or unacceptable risks with respect to regulatory requirements and identify remedial options. The ATSDR PHAs are qualitative and answer the question, "Has my health been affected?" The EPA RA is quantitative (with large uncertainty) and answers the question, "What's my (theoretical) risk of disease?" "The actual risk may be less; it may be zero."

A second meeting was held on January 20, 2004 where the working group heard Dr. Paul Charp's present an overview of the initial ATSDR PHA for Radiological Releases from White Oak Creek. The WG went through that presentation and gave Dr. Charp many comments, which they saw reflected in his presentation during this meeting. Dr. Craig said that everyone should now have copies of the White Oak Creek PHA. The PHA is not in the comment period, but in order for the WG to have input on this rough draft, the WG will be involved in the actual development of the draft document. The WG needs to get the ORRHES members' comment on the document. The person receiving comments is Dr. Bill Taylor. Electronic comments via e-mail are preferred, but the WG will accept comments in any form.

The comments will then be transmitted to Dr. Craig one week from 2/02/04 and he will collate them and organize them into categories. He stressed that he would not change the comments, but there may be some summarization of the comments. Those comments will be brought back to the WG. What is likely to happen is that in order to expedite the schedule, the PHAWG will want to culminate the comments and then a recommendation will be required in order to transmit those comments to ATSDR for inclusion in their draft that they will release. This all needs to be done before the April 2004 meeting. Therefore, it is likely that the ORRHES will be calling its first teleconference in order to deal with the comments on the White Oak Creek PHA. The work group will try to make sure that everyone has copies of the comments and the summarization ahead of the teleconference for everyone's review, so that the teleconference will be productive.

Discussion Points:

- Dr. Cember asked on which document the ORRHES would be commenting, Allan Susten's presentation or the PHA. Dr. Craig clarified that they would be looking for comments on the White Oak Creek PHA. Everyone has had about two weeks already to review it. One more week is left for the ORRHES's input into this document. He said he had no idea when the teleconference would take place, but it might be toward the end of February.

- Dr. Davidson noted that they would discuss the timing of the teleconference after all of the work group reports.

- Dr. Craig said that the Y-12 Uranium PHA is in printing and will be released very shortly.

- Ms. Spencer commented that the reason the subcommittee needed to have a teleconference was because if they did not, the Public Comment version of the document would be delayed, which is scheduled for release in April 2004. ATSDR plans to have the meeting in Kingston, with a public availability session and a big splash, similar to what has been done with this meeting, but really try to do a lot more and get information out. In order to do that, the ORRHES needs to have a teleconference so that the subcommittee can endorse the recommendation coming from the PHAWG about that document.

- Ms. Mosby asked in which document the ORRHES's comments would be included. Ms. Spencer responded that the ORRHES's comments would be editorial and would be incorporated into the Public Comment document that is going to be released in April 2004.

- Ms. Mosby asked for clarification regarding the wording of the written PHAWG report to the ORRHES. The report said that the ORRHES members' comments on this document would be "collated by me and presented for review and approval of the work group at the February 17 PHAWG meeting." She asked if the ORRHES members' comments would have to be approved. It was her understanding that all of the comments would be accepted and included, so there would not be any editing out of comments. Dr. Craig responded that all he would be doing was collating and summarizing them and bringing them to the ORRHES. Everyone would look at and discuss them as a subcommittee. The subcommittee would then submit the comments. Dr. Davidson added that the package would be approved by the PHAWG before it was sent to the ORRHES. There is a PHAWG meeting on February 17, 2004.

- Dr. Craig said he would present them to PHAWG and PHAWG would talk about them, but none of them would be filtered out.

- Dr. Cember asked if the PHAWG wanted the comments in writing rather than telephone comments. Dr. Craig affirmed that the he wanted the comments in writing. He reiterated that the comments needed to be submitted by one week from 2/02/04 to Dr. Taylor in writing, preferably by electronic transmission. Preferably, the comments will not be written in the text on the actual document, but members will pull out sections and say, on page "X," paragraph "X," on line "X" make this change. Dr. Craig said that was the only way he could deal with the comments. If he had to go back through 20 books and pull out line-by-line comments, he would never get it done. Therefore, he needed the comments separate from the document and in writing.

Communications and Outreach Work Group Report

Mr. James Lewis
Chair, COWG

Mr. Lewis indicated that the COWG met on January 28, 2004 and discussed communications of public health assessments and outreach of the ATSDR into the community. The group also discussed trust and consensus issues surrounding the Y-12 ORRHES vote. The COWG reviewed the meeting's videotape, to try to get a better feel for what happened in that particular meeting that may have resulted in the type of discussion that the subcommittee had near the end, and the vote that they first obtained. A couple of things were identified on the videotape that related to trust issues and how the meetings were managed.

Recommendation #1 was presented by Dr. Peter Malmquist from the PHAWG for review, and the work group discussed communication and education strategies for the PHA. Some of the questions and concerns raised in the COWG have actually been addressed in this subcommittee meeting, such as the identification of abbreviated forms of communications. This was something that Mr. Lewis had hoped that the DHEP would have been there to discuss with COWG, along with ideas on determining the content and level of readability for various audiences and identifying when and how this information will be disseminated inside and outside ORRHES. Mr. Lewis asked how the group could release a brief or shorter document that summarizes PHA concerns for ORRHES and the community at an early stage, so that they will have some idea of what is going on during the PHA process.

Mr. Lewis returned to Dr. Malmquist's recommendation, which was listed as recommendation #1 on the work group report form. He said he wanted to present this recommendation first, because he thought it was the easiest one to discuss. He said that the other recommendation would most likely raise some hearty discussion.

The COWG recommended that the **ORRHES recommend that, "ATSDR develop a comprehensive communications-education plan for disseminating key information (such as videos, fact sheets, briefing papers, and presentations), in accordance with the process flow sheet for producing the public health assessments. This effort should start at the beginning of the PHA process. The PHA should address the concerns, health data, and environmental exposures. The tools should be crafted to the needs of the individual communities. ATSDR should revitalize the needs assessment effort by pulling together neighborhood groups to identify specific issues and concerns and ATSDR should return with feedback to those same neighborhood contacts in an accelerated manner."**

Mr. Lewis indicated that when this particular recommendation was drafted, the COWG did not have the information that was presented by DHEP at this meeting. Based upon the acceptance of what DHEP gave the ORRHES, as it relates to the needs assessment, it may be somewhat questionable whether the last paragraph is warranted. However, the first four paragraphs were what Dr. Malmquist was interested in and what the COWG voted on as a recommendation to the ORRHES.

Mr. Lewis explained that the reason that the COG said that communications-education should begin at the beginning of the PHA process was because all of the communications-education efforts appear to be starting either at the Brown Cover level or going on through the Red Cover level. Everything seems to be centered such that once ATSDR produces the product, they then go into the education mode. The COWG felt that ATSDR should begin educating people along the lines as soon as the PHA process begins. There may be key definitions that ATSDR needs to release or presentations that they want to give. These things should be done prior to the Brown Cover being released to the community. The COWG does not think ATSDR needed to wait until near the end and then rush to release some communications-education.

Second, it was the COWG's opinion that as a part of this communications-education effort, the PHA should address concerns, health data, and environmental exposure. For example, Ms. Adkins talked to the group about the fish kills. As Mr. Lewis reviewed the Red Cover document, he saw no information associated with fish kills. Because he worked at TVA, he has heard many people talk about these fish kills, and he knows that this is the type of information that the public is asking for. Another example is the excellent explanation that Dr. Cember gave on the types of radiation. If these concerns were addressed as soon as the PHA process began, then people would not appear at ORRHES meetings trying to find answers. If ATSDR could get more concerns into their database and capture those as the documents are being released, then the people would be impressed that the ATSDR was addressing their specific concerns. Based on his comments, Dr. Lewis said he would like to see if someone would put this recommendation on the table for voting so that such a plan could be worked into the DHEP's and the CIB's comprehensive program per contaminant of concern.

Discussion Points:

- Dr. Craig asked how the COWG's plan differed from the plan that the DHEP presented (e.g., Was it specific to each PHA?). Mr. Lewis explained that the COWG felt that communication to the public with each PHA begins too late in the process. The work group was saying to start at the beginning. Communication strategies should be developed at the beginning of the PHA process and they should ensure that the public had the information they needed along the way. They should not wait until the documents were released, but instead should start developing the fact sheets and the briefing packets at the beginning.

- Dr. Davidson pointed out that the ORRHES discussed the issue of health data at the last meeting. That data is going to be included the PHA overall, because each one of the PHAs that ATSDR is preparing is one chapter of the story. She thought that the group needed to look at them in that way. ATSDR has told the ORRHES that the health concerns data will be addressed in the PHAs overall. For example, when ATSDR addressed Y-12 uranium, that is only one chapter in the PHA process. Normally, all of the PHAs would be included in one document, but they are breaking them out separately because the PHA should address concerns, health data, and environmental exposure. The PHAs would, but each one of the individual PHAs that are being developed is essentially like one chapter in the overall health assessment for the ORR community, and the health concerns will be addressed overall. The health concerns will be a part of the overall PHA and will not be in the smaller PHAs.

- Mr. Hanley said that what the ATSDR visualizes with the overall summary document is that there would be a summary of each PHA, the previous screening analysis, and a summary of the cancer incidence review and other key documents. With regard to concerns, Mr. Hanley indicated that he had not really thought about exactly how to present those. He asked the group if they had any suggestions on how to present the different, overall, or key health concerns they thought should be addressed.

- Mr. Lewis explained that the COWG simply meant that the ATSDR should present whatever health data is available. They did not want to force them to do that, but were simply saying that if some health data were available that the ATSDR could have someone like Dr. Hershman present, that could help people understand what is happening. The work group is not demanding to force the issue via this recommendation.

- Dr. Davidson expressed confusion regarding what the work group was requesting from the ATSDR, because to her, health data meant information that is collected systematically.

- Mr. Lewis clarified that, in his opinion, if there is data that ATSDR knows may raise questions in the minds of some community members, as a program is developed, they should try to address those issues. If the ATSDR is aware of a particular report and wants people to understand what is going on before the conclusions are drawn, then they should examine efforts in that field and try to develop a communications plan around that information. If the information is not available, then it cannot be presented, but if information exists and is available at the time that ATSDR is developing its plan, then it should be presented. Some studies may be completed before ATSDR finishes a PHA. That information could be utilized. The concept of the work group was simply to use all available information to develop a communications plan before the end of the PHA process. For instance, the group heard from Dr. Cember about dealing with birth defects. He identified an individual who might be able to attend a meeting to present on that issue and offer an overview of what that means. That could be considered part of an education program. Anything that ATSDR can do to improve communications, so toward the end of the process, people will already know what they are talking about, can make it easier to more confidently support ATSDR's conclusions.

- Dr. Davidson clarified that this was not what she meant either. If particular health data were connected with a particular PHA, it could be perceived as misleading people. For example, if preparing a PHA on radiation and the health data is not related to radiation, it would be misleading people by including that health data in that particular PHA. Perhaps an overall summary of health data should be prepared as its own separate document, in which the health data are shown to relate to the PHA overall. That is, communication of health data has to be done in a way that does not make people think that there is a connection when there is not one.

- Mr. Lewis commented that often, an act of omission in an attempt not to be misleading could be construed as suppression of information. He agreed that they should not make connections that could be misconstrued. However, he acknowledged that the general public

sometimes would like an explanation of the issues and why something was or was not connected to certain concerns. Mr. Lewis felt that Dr. Hershman did an excellent job discussing thyroids. His presentation is one example of taking existing data that he was aware of and sharing it with the public. Perhaps some of the data may not be related, but the public needs to understand why, and Mr. Lewis thought such an approach should be evaluated and rolled into the process wherever practical.

- Ms. Mosby did not think that the recommendation reflected Mr. Lewis's thoughts adequately. He was talking about educating and starting the education at the beginning of the process rather than somewhere down the road, but the recommendation did not reflect such a plan. Mr. Lewis disagreed. The recommendation states that the ATSDR should "develop a comprehensive communications education plan for disseminating key information in accordance with the process flow sheet for producing the PHAs." In the process flow sheet, which he showed the group at the beginning of his briefing, he did not skip any steps.

- Ms. Mosby pointed out that the recommendation does not specifically say "at the beginning of the flow sheet." She insisted that the recommendation did not reflect the current discussion. Again, Mr. Lewis read the recommendation.

- Dr. Davidson thought the beginning of the PHA process started with the collection of data and when they make that announcement to the ORRHES. That is when the ORRHES informs ATSDR if they have any additional sources of data that they should consider in developing a particular PHA. That is the beginning of the process for each one of the contaminants of concern.

- Ms. Mosby reiterated that she did not think the recommendation was clear, although she did not know how to rephrase it.

- Dr. Malinauskas suggested that Dr. Davidson was concerned that by planning on an educational strategy for each PHA might be a little bit misleading, and the essence of the recommendation is to develop a communication and education strategy at the time that the PHA is being developed. The PHAs, by and large, address identified concerns. Therefore, he thought it would be appropriate to plan on communicating the results of the individual PHAs, certainly as well as the overall assessment.

- Dr. Davidson clarified that this was not what she was saying. She certainly thought that each PHA had to be communicated to the target public. Her concern was that she wondered whether they should put all of the specific health data in each individual PHA or if they should put all of the health data in a separate PHA. She said she was not talking about general health concerns, because the concerns should be addressed in the concerns section of the document for each PHA. What she meant by health data was the data that is collected from the TN DOH and other sources. She wondered whether all of this health data should be discussed together and placed in their own document so that it received its own emphasis, rather than trying to put the appropriate data in each one of the documents as they go along. As far as the health concerns that are expressed in the meetings, and that ATSDR has received, those things should be addressed each individual PHA.

- Dr. Malinauskas asked if he was correct in thinking that the ATSDR intended to provide a compendium once all of the individual PHAs had been completed.

- Ms. Isaacs wanted to make sure that she understood the recommendation and Dr. Davidson's concern. She thought she was hearing what Mr. Lewis was saying regarding education. For example, Ms. Adkins had expressed a concern about common geological formations that are shared between communities and the site. What Mr. Lewis was saying was that at a certain point, it would be helpful to have presentations on what ATSDR knows about the fate and transport of contaminations along geological formations. It seemed that Dr. Davidson's concern was about morbidity and mortality data or health outcome data. There was concern about including some health outcome data in the Y-12 PHA that was not really related to the contaminants of concern and the exposure to the contaminants that were plausibly linked to that contamination and at the levels that were being seen. If discussing an outcome that is not related to the contaminants being evaluated, then there is an impression that the outcome is linked to the pathway analysis. Ms. Isaacs thought that ATSDR could easily offer education that would help people understand how they arrived at their conclusions, and perhaps when they get to the groundwater issue, they may want to include education by hydrogeologists before they ever get to data validation. Health outcome data will be included in that particular PHA, based on whether there is a completed pathway, what the doses are, and where there is a plausible association with morbidity or mortality.

- Dr. Davidson agreed, stating that Ms. Adkin's concerns regarding groundwater, wells, and aquifers would be addressed in a separate PHA of its own. She just wanted to make sure that would not be lost somewhere along the way and that it would receive attention.

- Ms. Isaacs pointed out that her groundwater illustration was simply an example. What she heard Mr. Lewis saying was that people needed to have information about the state of the knowledge before ATSDR gets to the conclusions, so that they would understand what had gone into the PHA. As she understood the recommendation, it was not totally tied to morbidity and mortality data.

- Mr. Lewis affirmed that this was correct. He commented that Dr. Malmquist was not present, but other PHAs have been done where ATSDR has included all of the health outcome data. This issue has been discussed. He pointed out that he could force the ATSDR to put the information into the PHAs, but if information is available, then the COWG thought it should explained. Of course, no one wanted ATSDR to draw conclusions without evaluating the data, but if there was information associated with that, when it came to an education plan, ATSDR should try to share as much of that information as possible with the public. Ms. Mosby agreed that this was what she was hearing too, but she did not see that in the recommendation.

- Regarding the ORRHES flow sheet, Ms. Adkins said the first step was social assessment. She thought that was what Mr. Lewis was saying. If doing a social assessment, then people are not going to show up to give input about groundwater only to be told that the meeting is on mercury, the discussion is about fish, no one wants their input, and they will have to come

back. There must be some type of coordination so that the COWG plan allows for that. The important thing about the COWG's recommendation is that the ORRHES or ATSDR does not just take information from people, but that they are actually given some feedback for their concerns. That was the part that really excited her.

Hearing no further discussion, Dr. Davidson called for a vote on the COWG's first recommendation.

Motion

Dr. Bob Craig moved to approve the recommendation. Dr. Cember seconded the motion. The motion carried: 11 in favor, 0 opposed, 2 abstentions

Mr. James Lewis
Chair, COWG
Presentation Continues

Mr. Lewis then addressed the COWG's second recommendation, which he thought that some subcommittee members would probably feel was somewhat controversial. Recognizing the EPA's reluctance to fully endorse the Y-12 Uranium Releases PHA, and because of the associated issues with the News Sentinel article (June 6, 2003, by Frank Munger), and the widespread circulation of that paper, the COWG recommends that that:

"ATSDR should withhold the release of the Final Y-12 Uranium Releases PHA until ORRHES has discussed and evaluated both EPA's and ATSDR's views on the remaining outstanding issues specified in EPA's letter to Dr. Kowetha Davidson.

As a part of the effort, the COWG looked at this from a communications perspective. They reviewed the letter. The letter indicated some things that were different than what the COWG had originally understood. There was confusion after looking the tape on what had transpired in the other meeting as far as the group having an overall knowledge of where the ORRHES and ATSDR stood. Not a lot of information was brought to the subcommittee as a whole. Therefore, the COWG felt that perhaps 50% or more of the people at the meeting did not really know what went on inside the EPA and what those challenges were. Some of the technical experts around the table understood it better than others. There had not been any formal deliberation as a part of the effort with ORRHES, so that the lay people and other people could understand what was going on.

After looking at the tape and after reading the letter, and once they had reviewed the 10-12 items there, they realized that the concerns boiled down to two areas. One area was associated with the 5000 millirems. The other was associated with risk. The COWG determined that if there was an outstanding item hanging over a PHA document, that had as much publicity as this document has had, the COWG felt that the ORRHES should consider withholding the release of that information until the issues were resolved.

Mr. Lewis telephoned EPA, as an individual, to just get a feel for what they felt about this issue, because of the experience in Scarboro. Articles have put a cloud over this document. The 800 pound gorilla has spoken and has put a cloud over this document. If the document is released with the cloud still overhanging it, then the cloud will still be there. Mr. Lewis picked up the newspaper that said, "EPA Flays ORRHES's Report." [It sounded like this is what Mr. Lewis stated, but a news search found no article with this title. An article was located from June 5, 2003, by the same reporter, entitled, "EPA Blasts Favorable Report on Y-12 Uranium Releases."] This particular effort, put in the newspaper by Mr. Munger, got a lot of distribution. This particular distribution is still out there, whether it be the Brown, Red, Blue, Yellow or Green cover. It does not matter. What the ORRHES has is a letter in-house, from the EPA that says there are still outstanding issues.

It is the COWG's opinion, as part of this effort, that the ORRHES should have a formal deliberation of this effort internally before issuing the Y-12 PHA, so that the ORRHES will see, internally, which side it is on. The subcommittee has heard ATSDR's side, but it has not formally heard the EPA's side. It is the COWG's opinion that in order to improve communications and to get a document accepted by the general public, which is what the work group thinks is the overall objective, the subcommittee should have that type of deliberation internally or have someone as a part of the subcommittee set up an ad hoc committee to compare the two positions. They should then report back to the subcommittee so that the whole group can understand what the issues are and determine whether to offer their support. The group may find that they have to agree to disagree, but that is the intent of this recommendation. The COWG feels that it is political suicide to release a document with outstanding issues, when there have not been any formal deliberations within the subcommittee.

Discussion Points:

- Dr. Davidson commented that the subcommittee has had a deliberation on 5000 millirems and the subcommittee endorsed using that as the screening level. Dr. Charp presented to the work group and to the subcommittee on this issue. This was going on over a year ago. Mr. Hill was the person who specifically asked the ATSDR to bring in the documentation for using the 5000 millirems as the screening level. This has been discussed in depth in the work group as well as in the subcommittee. Regarding outstanding issues with the EPA, the EPA refused to talk to Dr. Davidson and to Dr. Cember, and they refused to allow them on the conference call with them. The subject with the EPA is dead. They are not going to come to an ORRHES meeting and defend this. They are not going to do anything. They dumped this issue on the community and now they are sitting back in Washington. The ORRHES does not even have an EPA representative at this meeting. That is how important they think this issue is. Of all the people in Region 4, in Atlanta, they could not find one person to attend this meeting. Dr. Davidson said she thought it was absolutely appalling, and then to think the ORRHES was going to hold up its document for someone who would not even come to the community to defend what they were doing.

- Dr. Craig added that the ORRHES does not know the people in EPA headquarters. They have never been to Oak Ridge as a part of this effort and are not familiar with the issues. Secondly, the ORRHES brought in Dr. Alan Susten to deal specifically with this issue. He delivered a two-hour presentation on exactly what the differences are between the EPA's and ATSDR's approaches. Dr. Craig thought that everybody in the room walked away satisfied that the approach that the ATSDR and the ORRHES are taking, the qualitative screening approach, which is the one that the subcommittee agreed to three years ago. It is the one that the ATSDR uses throughout the country and the one that the ORRHES is using currently, as opposed to an EPA risk-based approach. EPA will not defend it. Dr. Craig stressed that this issue was over. They were not going to deal with it. He did not think that EPA had the guts to bring the guy to a meeting who wrote that [letter].

- Mr. Lewis commented that he had not seen, personally, a formal letter. He recommended once before that the subcommittee take whatever means necessary to bring the people into this subcommittee to present their side and engage in a deliberation. To him, it was important that the subcommittee do this prior to publishing a document to create the same situation that the subcommittee had once before. He thought Dr. Davidson's letter did not go out through the subcommittee. The weight of the ORRHES should have been behind that letter or the group should have gotten the appropriate people to telephone the EPA. He did not care if they had to go to a Congressman or a Senator. He concluded that he stood behind the way he presented the recommendation.

- Dr. Davidson stressed that regardless of his position, the EPA refused to speak to the ORRHES informally or formally. The EPA has a different mandate from Congress, and they are not the same as ATSDR. The subcommittee can vote, but she did not think that they should be held hostage by the EPA. She did not see them as an 800 pound gorilla. The ORRHES should not have to go through Congressmen or anybody else in order to get EPA to a meeting. She thought the group was allowing the EPA to hold them hostage.

- Mr. Lewis said it was his personal opinion, and the opinion of some of the others with whom he met, that it is very important that the ORRHES reaches out to use whatever means necessary to force EPA to the table, so that this issue does not remain outstanding. If the ORRHES gets into these kinds of discussions and fights on every upcoming contaminant of concern, then it is going to be ridiculous. Mr. Lewis said that if the EPA is a federal agency, it was his opinion that the ORRHES needs to take the appropriate means to have them attend a meeting and defend their position. He had not seen the formal effort by this ORRHES, such as a letter from Dr. Falk going to the EPA or something signed by the ORRHES going to EPA, requesting them to come. What he had heard from Dr. Davidson and others was about informal attempts. He thought they owed the public to ensure that there was not an outstanding cloud over the issue.

- Dr. Davidson pointed out that her letter to the EPA was not an "informal" attempt. She sent that letter as Chairman of the ORRHES, which meant that she had the power of the ORRHES behind her in sending that letter. She did not send the letter as Kowetha Davidson, private

citizen. EPA indicated that they were not going to attend, which meant they would not attend.

- Mr. LC Manley asked if the subcommittee could bring this recommendation to a vote and cut the discussion off, because it was getting to be ridiculous. Dr. Davidson agreed that they could bring it to a vote and end the discussion.

- Mr. Hill asked Mr. Lewis if he was going to make the recommendation. Mr. Lewis stated that he was going to make the recommendation. He recommended that the ORRHES adopt the COWG's recommendation.

- Ms. Mosby asked if the document could be released and the ORRHES could continue to pursue getting a response from the EPA. Does the doc have to be held up? Ms. Spencer responded that they could release the document. Also, even if the ORRHES voted during this meeting, the ORRHES is an advisory committee and it would be up to ATSDR to decide whether they would release the document.

- Ms. Mosby understood that the ORRHES was simply making a recommendation, but she wondered if there was some reason, if the ORRHES voted the recommendation down, that the group also was saying that the ORRHES could not continue to pursue getting a response from the EPA. Or perhaps the recommendation could include that they recommend that Dr. Falk send a letter asking the EPA to respond. Dr. Craig pointed out that the EPA saw that letter as a face saving move. They were sorry that they did it. They made a mistake, but this was as far as they could go. They were going no further with respect to admitting that they did not coordinate their issues. However, they do say in the letter, "We also continue to believe . . . we understand that ATSDR plans to use an external panel of epidemiologists and radiation experts to review the PHA and will consider changes based on their input." He asked the ATSDR staff if they were putting together that review panel. Mr. Pereira responded that had been done.

- Mr. Pereira thought what Mr. Lewis wanted was great, but it was not going to happen. If the group had eight EPA Washington people attend the meeting that day, there would be no resolution. EPA was not going to come to the table and say, "We agree with ATSDR." ATSDR is very unlikely to change its position on this topic. ATSDR has covered it ad nauseam. What Mr. Lewis was looking for was not going to happen, whether the people were there or not. It was unlikely, in his personal opinion, that Dr. Falk would be willing, under his signature, to send a letter.

- Dr. Cember commented that the result of this document was that the ATSDR found no public health problem. Therefore, if the purpose of releasing this document was to allay the fears of the community, and if, at the same time, the EPA condemned this document, it would become a matter of trust. Who will the community trust more, the EPA or the ATSDR? Dr. Cember did not know the answer, but he thought that it was the answer to that question that should determine whether this document should be released. The ORRHES was convinced that the document was scientifically valid, but who would the public trust? And if it is released and the EPA condemns it, then what? Mr. Pereira responded that the EPA is not

condemning it. The EPA basically concluded the same results. They just got there differently.

- Dr. Cember wondered why the newspaper said that they condemned it. Dr. Davidson pointed out that it was a newspaper.

- Mr. Hanley said that they could read the letter that was sent recently to see what their conclusions were. Dr. Malinauskas added that as he understood that the letter, it in effect, said that the ATSDR had set the criteria "here" and the EPA sets it "here" and never the twain shall meet. So, this is really moot.

- Dr. Davidson pointed out that the levels are set for different purposes.

- Dr. Malinauskas said that, frankly, he did not see any use for an uncertainty analysis. That was just a mathematical exercise that kept other people in business.

- Dr. Davidson reminded everyone that the subcommittee had already endorsed the 5000 millirem level, after much discussion.

- Ms. Adkins commented that she did not know if she would have to answer for the votes on judgment day, but she did have to answer to the people who are sick and who are going to look to her when this is all over. Therefore, she tended to err on the side of caution because these are peoples' lives and health, and she did not know whether the ORRHES needed to seek help or could be frivolous. Since there were not that many sick representatives on the subcommittee, she felt a lot of pressure.

- Dr. Charp made an effort to put the issue of risk into a different context as it related to the numbers and the EPA's 10^{-4} upper bound, Superfund risk. The EPA directive states that the EPA assumes 10^{-4} as the upper range for clean up. Dr. Charp asked the group to consider the following: The meeting participants were sitting in a room together in Kingston, Tennessee. For the next 40 years of their lives, he wanted everyone to walk from that room to the outside, and in and out every day. Most likely, the radiation exposure they would receive from inside the room and walking outside, would exceed 10^{-4} risk. With respect to EPA's 10^{-4} risk, a variation of 5 millirem per year above background and one microR variation in background would give a person 8 millirem per year. Therefore, 5 millirem above background is within variation of a person just living. The EPA is saying that if a person just lives, he or she is going to exceed the EPA clean up risk value of 10^{-4}. That is how ridiculously low their numbers are. One of the experts contracted to give his opinion on all of these issues, who was on the panel that ATSDR convened, at the request by Dr. Falk or by a mandate, said that the issue was not that ATSDR's value was too high. Instead, the issue was that EPA's value was too low. Upon examination of the data, no adverse health effects will be observed until 2-4 times higher than the level that the ATSDR chose. With that in mind, it was suggested that they change the term from "risk" to "chance," and consider whether that chance was ever going to be observed, the answer to which is probably "no."

- Mr. Davidson called for a vote.

- Mr. Hill said he would like to hear the motion.

- Mr. Lewis moved that the ATSDR should withhold the release of the Final Y-12 Uranium Releases PHA until ORRHES has discussed and evaluated both EPA's and ATSDR's views on the remaining outstanding issues specified in EPA's letter to Kowetha Davidson.

- Mr. Hill asked if that motion was by ad hoc committee, or how it would be done. Mr. Lewis thought it could be done by an ad hoc committee. Dr. Davidson responded that she thought it would a PHAWG issue. Others agreed.

- Dr. Cember pointed out that the EPA said that they would agree with an independent review committee, with an external panel of epidemiologists and radiation experts. Dr. Davidson replied that had been done.

- Dr. Cember asked what the conclusion was, because according to the letter, the EPA should concur with the ATSDR, yet there was still disagreement. Dr. Charp indicated that the panel met on October 28-29, 2003, and ATSDR was expecting the final report, a layperson report, to be delivered to the ATSDR Friday by a member of the panel. The ATSDR had not yet received that report. The ATSDR has given Dr. Falk the panel's recommendation. The panel essentially said that when it comes to a matter of dose, risk, and 5000, everything that the ATSDR has done is agreeable with the panel. The issue was a matter of communication: How do you communicate what these numbers mean or what these risk numbers mean? What does the dose mean? The panel members who met in Atlanta included: Dr. Bob Spangler, who was Assistant Director for Science at the time, who actually transmitted the questions to the panel; Dr. Tom Mason, an epidemiologist at the University of South Florida; Dr. David Kleinbaum, an epidemiologist at Emory University; and Dr. Charles Miller, a meteorologist/health physicist with the National Center for Environmental Health (NCEH)/CDC. External experts from whom ATSDR requested information included: Dr. Charles Land, from the National Cancer Institute (NCI) and Dr. John Boisht, who used to be with the NCI, and whom many people consider to be perhaps the world's foremost authority on radioepidemiology issues. All agreed that ATSDR was agreeable with 5000. The risk is okay. The dose is okay.

- Dr. Craig asked if the panel gave that to the ATSDR in writing. Dr. Charp responded that the ATSDR has it in writing, although Dr. Falk wanted a layperson's response. Once he received the layperson's response, and he signed off on it, it would be distributed to the EPA as well as to members of the ORRHES. Dr. Craig did not want to say it would become ATSDR policy, but his gut feeling was that it would be something else that the ATSDR could add to bolster their use of dose over risk and a screening value of 5000. Ms. Isaacs agreed with that.

- Mr. Washington pointed out if the ATSDR had not received that in writing, then it had not been done essentially. Dr. Charp replied that the version he wrote and submitted to Dr. Falk was reviewed by the panel members, and they all agreed with it in principle.

- Mr. Washington asked if they signed the document. Dr. Charp responded that they did not sign it, but ATSDR has it in e-mail.

- Mr. Washington asked if Dr. Charp understood what the ORRHES was attempting to avoid. As long as there are differences, there are going to be people who will take issue with those differences, no matter how insignificant they are, which may negate the validity of the effort, to some people. Dr. Charp agreed that there would always be somebody who doubted the EPA, the ATSDR, or both agencies.

- Mr. Washington believes ATSDR when they said EPA got it wrong, but maybe EPA is too small or large to acknowledge that they are wrong. Dr. Charp replied that one approach is based on a regulatory aspect for cleanup and one is based on health. One is based on a perceived risk and one is based on review of the literature.

- Dr. Cember thought that if the document were released with some small degree of fanfare (e.g., made public for the first time in the Oak Ridge area at a public forum, with media present) ATSDR could explain that there was a difference in the methodology, but that both groups arrived at the same conclusion. If this were done with a public release, it would get into the newspapers immediately, and Dr. Cember thought that would solve the problems.

- Ms. Mosby called the question to vote. Dr. Cember suggested an amendment saying that this document be released, as he described, and that the public release be done in the ORR area, in the presence of the public and the media, along with the official explanation that Dr. Charp gave.

- Dr. Davidson thought that would be a separate motion.

- Ms. Mosby called the question to vote on the first recommendation, indicating that the subcommittee could make another recommendation for the second suggestion.

Motion

Mr. Lewis moved that the ATSDR should withhold the release of the Final Y-12 Uranium Releases PHA until ORRHES has discussed and evaluated both EPA's and ATSDR's views on the remaining outstanding issues specified in EPA's letter to Kowetha Davidson. Mr. Hill seconded. The motion failed: 6 in favor, 7 opposed, 0 abstentions

- **Dr. Cember moved that the Final Y-12 Uranium Releases PHA be publicly released in the ORR area, in the presence of both the public and the media, along with an official explanation regarding the differences between the ATSDR and the EPA methodologies (in determining risk versus dose), both of which reached the same conclusion**. The ORRHES agreed that this motion would need further wordsmithing. Dr. Craig seconded.

- With regard to the EPA letter of January 9, 2004 to Dr. Davidson, Mr. Hanley commented that in the third paragraph, the last sentence states, "We have also discussed our comments with ATSDR and agree that there are no current public exposure concerns from releases from

the Y-12 facility in Scarboro." With regard to current exposures, they do agree with the ATSDR. There are two issues with which they disagree. One of the issues is the 5000 millirem, and he thought with ATSDR's certified public health education specialists, the ATSDR could work up an explanation of that disagreement. Dr. Charp and Mr. Hanley have, in the PHA, presented the different views regarding the 5000 millirem and the EPA's version, and he thought working with the DHEP staff, they could simplify the differences to explain that to the public on the front end, instead of having to be on the defensive later. They also state in their letter that the "EPA believes that ATSDR should be consistent and use the Superfund risk range for both chemical and radiation risks." The other issue is the uncertainty analysis. ATSDR has presented its view compared with theirs, and could simplify those comments also, explaining the differences. Those seemed to be the two issues of concern in the letter. If there were other concerns, the ATSDR could try to develop a simple response to those and acknowledge that there are differences of approach, different methods, and different purposes. Also, regarding the risk assessment/health assessment issue, the ATSDR has a joint document that was released by ATSDR in Region 4, which explains some of the differences.

- Ms. Adkins thought it sounded as if a lot of the issues were based on Dr. Falk's endorsement. She asked if it was true that his clinic was funded by the DOE money, which would raise a trust issue. If not true, then she needed to know before the vote. Mr. Hanley explained that Dr. Falk is the Associate Administrator of ATSDR, and he is not at a clinic. He thought that she was talking about the Emory Clinic, which is Dr. Frumkin. Sometimes, that confusion does occur.

- Ms. Adkins said she stood corrected. With regard to sampling, for which there is Level 1 and Level 2, she wondered if ORRHES's report was based on Level 1 sampling and if anyone knew whether Level 2 sampling was supposed to have been done. Dr. Charp responded that there was a Level 1 and Level 2 Screening Assessment.

- Mr. Hanley asked what Ms. Adkins' reservation about the screening levels? Ms. Adkins responded that she thought that when certain things showed up, testing needed to go to level 2 screening, and the ORRHES did not do that. They based their information on Level 1 screening. Mr. Hanley replied that in the Task 6 document, there is a Level 1 Screening. It is a very conservative, worst-case scenario type of screening. When the EPA screened, they derived a hazard index that was above their guidance. They [who?] usually go to a Level 2 screening, which is realistic exposures. They [not clear whether he meant ATSDR or EPA] stayed on the safe side and continued to use some of the conservative assumptions, so they could not go to the Level 2, which was realistic. Because there were still some conservative factors used, they [who?] called it a "Revised Level 1," although it was still an overestimate of the dose. Dr. Craig pointed that it was the most protective. Mr. Hanley said the screening they did was more protective than the Level 2 [broad reference pronouns in these comments require clarification].

- Mr. Hill asked for clarification on the motion. He asked if the motion was to release the document without contacting the EPA again, but with an explanation of the disagreement between the EPA and the ATSDR (e.g., the subcommittee does not plan to follow up by contacting the EPA and asking for any more clarification or consensus from them). Dr. Cember responded that was the sense of the motion. Dr. Davidson added that it was to release it in this area, with the public and the media, with an explanation of the differences between the EPA and ATSDR, and to note that the differences were methodological, but the differences did not alter the bottom-line conclusion.

- Dr. Hill asked if that was still the ORRHES's interpretation, that no further clarification would be requested from the EPA.

- Dr. Davidson reiterated that the EPA has a totally different mandate from Congress than does ATSDR.

- Dr. Cember asked if the differences between whatever unit they used, 1000 or 2000 millirem and the ATSDR's 5000, according to the model that the ATSDR used for projecting the doses, what the maximum dose was that a person received using ATSDR's methodology. Dr. Charp responded that for responded that for Y-12, for Scarboro, the maximum dose from the uranium ingestion was less than one millirem over 70 years.

- Dr. Cember asked why they were discussing 5000 millirems as a criterion. Dr. Charp replied that because there was some concern that ATSDR would be screening out and ignoring high doses, the current whole body dose would be approximately 1 millirem over 70 years.

- Dr. Cember asked, even in the past in the ATSDR's analysis, if they had anyone who obtained a radiation dose in excess of 1000 millirems. Dr. Charp responded they did not. The dose that the Task 6 people arrived at was approximately 155 millirem. Dr. Cember stated that even using their criterion, the numbers are safe.

- Mr. Hanley pointed out that this was one of ATSDR's responses to the EPA's comment. The ATSDR told EPA that even using their 15 millirem over 70, they would reach only 105 [check this number] millirem, and the highest dose that was estimated for Scarboro was 155 millirem.

- Dr. Cember stressed that those numbers should be divulged during the public release. Mr. Hanley responded that those numbers are in the PHA, and he thought that some of the differences could be easily communicated. Dr. Davidson agreed that all of the differences should be communicated. She asked if everyone had a sense of what the motion was.

- For the record, Mr. Hanley said he wanted the ORRHES to know that when ATSDR communicated with the EPA, and e-mailed headquarters to have a meeting with them, ATSDR requested that Dr. Davidson and Dr. Cember be allowed to sit in on the call, to listen so they could hear first hand from EPA, so that ATSDR would not have to try to explain what the EPA was saying. EPA did not want that. They wanted to have two meetings; one

with ATSDR and another one with Dr. Davidson and Dr. Cember. The first meeting was held, but the second never occurred. They [who?] decided after having the first meeting with ATSDR that they would just write the letter. In addition to that, at that conference call, Ms. Isaacs suggested that they [who?] might attend the ORRHES meeting to present their views. They declined that invitation and decided to write the letter. Mr. Hanley received a call from Region 4 the day before this ORRHES meeting, saying that they [who?] would not be able to attend the meeting because of conflicts with the schedule.

- Ms. Mosby called the question to vote.

Motion

Dr. Cember moved that the Final Y-12 Uranium Releases PHA be publicly released in the ORR area, in the presence of both the public and the media, along with an official explanation regarding the differences between the ATSDR and the EPA methodologies, in determining risk versus dose, both of which reached the same conclusion. The ORRHES agreed that this motion would need further wordsmithing. Dr. Craig seconded. The motion carried: 10 in favor, 3 opposed, 0 abstentions

Discussion Points:

- Dr. Lewis said that those who opposed the motion should be allowed to say why they opposed if they want to do so. Ms. Mosby suggested that they do that in writing.

- Dr. Davidson indicated that the group would review the action items from this meeting and then they would discuss a date for the conference call meeting that they planned to convene. She also made sure that the focus groups knew to come prepared with recommendations to the conference call meeting, so that those things could be passed and work could continue. For example, the NAWG should prepare recommendations on focus groups and so forth, and present those during the conference call meeting, so that the DHEP and others would be able to continue their work and would not be held up until the April meeting.

Action Items from the 2/03/04 ORRHES Meeting

1. Mr. Jerry Pereira will report on specific budget changes that are critical to ORRHES. If none, then he will present an update at the next meeting. He will report that to Dr. Davidson and to the Chairs of the work groups, if there is going to be a major impact on the ORRHES.

2. Dr. Paul Charp will provide information on the fiscal and biological effective half-lives of radionuclides that he presented.

3. Dr. Timothy Joseph will provide a status and summary of the new well installation project available from DOE.

4. Recommendations were formally passed by the ORRHES subcommittee.

Discussion Points:

- Dr. Davidson and the group discussed the best date for the teleconference. The ORRHES decided that the best date and time would be Tuesday, March 9, 2004, from 12:00 p.m. to 3:00 p.m.

- On behalf of ATSDR, Ms. Spencer thanked everyone who had submitted their applications for renewal of their memberships on the ORRHES. She indicated that she would be contacting everyone as soon as she had something to report.

- At this time, Ms. Galloway pointed out that the group had forgotten to allow her to report on the Guidelines and Procedures Work Group.

- Dr. Davidson apologized for forgetting the Guidelines and Procedures Work Group and called on Ms. Galloway for the work group report.

Guidelines and Procedures Work Group Report

Ms. Karen Galloway
ORRHES Member

Ms. Galloway announced that the work group did not have a meeting, but she had been observing some of the specific comments and concerns that were raised by some of the subcommittee members and the general public, as well as the great answers provided by people like Dr. Gordon Blaylock. She believed that, eloquently, Dr. Blaylock had allayed many fears people had had for years. There was a lot of that going on during this meeting, because the group was getting to the specific sites and specific concerns that people have about the sites. She reminded the group that something was mentioned earlier about the way that the minutes were taken for the last meeting, which reflected almost verbatim what people had to say. Ms. Galloway thought the group should consider minutes that capture the specific concerns and the responses to those concerns.

Discussion Points:

- Dr. Davidson indicated that for the most part, the public's comments had been documented almost verbatim from past meetings. She acknowledged that the group did have one set of minutes, from the meeting before last, that were not pleasing to people and caused a lot of concern.

- Ms. Galloway agreed that people could have their feelings hurt and some issues were not captured. She thought that the ORRHES needed to avoid that, particularly now that the subcommittee was visiting the sites.

- Dr. Davidson pointed out that she thought the recorder had heard the subcommittee's concerns.

- Mr. Lewis asked if Ms. Galloway wanted to make a motion with respect to this concern.

- Dr. Davidson pointed out that if they requested a verbatim transcript, the minutes would not be completed as quickly. The ORRHES has also had complaints because it has sometimes taken so long to receive the minutes. Moreover, if they did not receive minutes as quickly, the turn around time for reading/approving the minutes would be faster, and the group would feel rushed.

- Ms. Galloway thought there was value in having more extensive minutes, and with that in mind, she offered a motion: Whereas the minutes of the ORRHES meetings have frequently left out important comments of ORRHES members, Ms. Galloway moved that ORRHES recommend that ATSDR should prepare verbatim transcripts for ORRHES meetings. Dr. Davidson added that those who could receive the minutes by electronic transmission, because depending on how they were documented, the product could exceed 200 pages.

- Dr. Cember asked if the members would have a choice of receiving it electronically or on paper. Dr. Davidson responded that it would be an individual choice. Ms. Spencer warned again that the verbatim transcripts could become quite lengthy. Ms. Galloway thought that what they received from the previous meeting was not bad; she liked the product.

Motion

Whereas the minutes of the ORRHES meetings have frequently left out important comments of ORRHES members, Ms. Galloway moved that ORRHES recommend that ATSDR should prepare verbatim transcripts for ORRHES meetings. Dr. Davidson appended the motion with the request that when possible, the ORRHES members should receive the minutes by electronic transmission. Mr. James Lewis seconded. The motion failed: 7 in favor, 4 opposed, 1 abstention

Discussion Points:

- After the motion failed, Dr. Davidson pointed out that the group needed 8 votes to carry the motion forward with two-thirds of the vote. She asked if there was an alternative to obtaining a complete verbatim. For example, perhaps the ORRHES could ensure sure that there is verbatim documentation of the public comments and responses, to ensure that everything is captured.

- Mr. Lewis thought that technical discussions were critically important. The technical experts may understand the technical discussions and presentation, but some people do not, and if the discussion is laid out in a clear, concise manner, that makes a difference for many lay people.

- Dr. Davidson pointed out that another alternative would be that if ORRHES received the minutes and someone observed something that they would like expanded or verbatim, they could make a specific recommendation for that to be included in the final version.

- Writer/Editor, Teresa Robinson assured the group that Cambridge Communications would provide a detailed summary, which would clearly set forth the deliberations of the meeting. Mr. Lewis thanked Ms. Robinson for her comments and he added that it was the consistency that he would like to have. The group keeps rotating writers and recorders and keeps getting a variety of things. Ms. Robinson encouraged the ORRHES to review the minutes and provide her with feedback.

- Dr. Davidson apologized again for forgetting the Guidelines and Procedures Work Group.

- Mr. Hill announced that the agenda committee had one meeting, where they discussed the agenda and put it together. He asked those that had questions to call Barbara [Last name?].

Motion to Adjourn

Mr. Hill moved to adjourn. Mr. Cember seconded.

With no further business posed, Dr. Davidson officially adjourned the meeting at 7:05 p.m.

End of Summary Report