

## SECTION ONE: INTRODUCTION

### Acknowledgements

The survey data that was collected was the result of a multi-university initiative between the Coal Impoundment Project at Wheeling Jesuit University, Eastern Kentucky University and West Virginia University. As part of this university collaboration, faculty and staff members from each of these universities participated in various stages of this research effort: In fact, it is unlikely that this report could have been produced without the help, guidance and field assistance received by the following faculty and staff from the above three institutions: Ben Stout, Ph.D. (Wheeling Jesuit University); Sharon Hardesty (Eastern Kentucky University); Jodie Hoover (Wheeling Jesuit University) and Ahmed El-Sotouhy (West Virginia University).

In addition, university students from both *Wheeling Jesuit University* (WJU) and *Eastern Kentucky University* (EKU) were involved in distributing and collecting surveys door-to-door. The help and undying enthusiasm of these university students during this intense data collection effort must be fully acknowledged. The students who participated in the survey of area citizens included: Rhon Blevins, Josh Boyda, Jaspal Brar, Tony Burnett, Christopher Cordell, Jonathan Franks, Stella Gibson, A.J. Harris, Lawrence Lee, Kendrick Lewallan, Patti Matthews, Megan McDavid and Davina Newton.

The eleven university (sociology) students from Eastern Kentucky University who were involved in this initiative did so as a part of a university-accredited field course in survey research design and field methods, which represented a highly unique opportunity for a team of undergraduate university students to be involved in a federally funded research project. The commitment of the *Coal Impoundment Project* in financially underwriting this training initiative must be acknowledged as well.

Finally, Steve Kroll-Smith with extensive experience and expertise in environmental and community impact assessment agreed to peer-review the contents of this report. Though the author takes full responsibility for the substance and conclusions contained within, the help received by Steve in improving this document must also be publicly recognized.<sup>1</sup>

### Overview:

The methods that were used to assess community views of coal waste impoundments in Mingo and Wyoming Counties WV in April 2005 were adopted from prior methods used by the research team to evaluate the community impacts of the massive coal waste impoundment breakthrough in Martin County, KY.<sup>2</sup> After the 2000 impoundment break, that released over 300 million gallons of coal sludge, slurry and black water materials into area waterways, a research team of university faculty and students from Eastern Kentucky University developed a series of methods to gage community perceptions in the wake and aftermath of the environmental disaster. First, through intensive field interviews with over 30 area residents, the team identified a series of consistent themes and concerns being expressed by area

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<sup>1</sup> Steve Kroll-Smith is Head of the Department of Sociology at the University of North Carolina at Greensboro. He has investigated technological disasters for over 20 years and was recently awarded the American Sociological Association's Section Award for Distinguished Contributions to the study of technological hazards and disasters. He recently co-edited an issue of *Law & Policy* that examines the role of sociologists in toxic tort litigation.

<sup>2</sup> Prior community impact research in Martin County, KY was internally supported through Eastern Kentucky University and federally supported by the Appalachian Regional Commission.

citizens. During these formal interviews, for example, it was revealed that many were concerned over the long term impacts of the sludge spill on the local environment, while other residents expressed serious concern (even anger) over the sore lack of any emergency warning or notification during the breakthrough. Still others in their interviews commented more generally on a history of ineffective regulation and enforcement over impoundments, black water releases and of the coal industry generally. However, it seemed that the most pressing concern among those that we interviewed remained the spill's impact on the area watershed and the subsequent quality and long-term safety of the drinking water supply.

Several months later, a questionnaire was developed to reflect these community themes and concerns and plans were made to assess the views of a wider majority of Martin County citizens regarding these issues. In March 2001, the research team conducted a door-to-door survey of area households and collected 290 surveys across an intensive week-long field sweep. A review of survey findings showed that many of the issues expressed in our initial interviews were also the concerns of a wider majority of Martin County citizens. In September of 2001 with Appalachian Regional Commission funding and support, the same survey was distributed in other coal impoundment communities in Perry County, KY. This comparison allowed our team to measure community differences in risk perceptions across disaster-impacted and non-impacted communities and subsequently, allowed our research team to more fully assess the impacts of the 2000 sludge spill on community life in Martin County, KY.<sup>3</sup> In July 2002 we published the first of a series of community impact reports.<sup>4</sup>

While our team continues with research and capacity building projects in Martin County, KY,<sup>5</sup> in November 2004 the Coal Impoundment Project at the National Technology Transfer Center (NTTC), Wheeling Jesuit University subcontracted with the "Martin County Project Team" at Eastern Kentucky University to conduct a general risk assessment of resident views and perceptions pertaining to coal waste impoundments in West Virginia.

The survey assessment that was developed was a modification of the instrument that was previously used in Martin and Perry Counties. Given that the original survey had been based on the themes and concerns that were raised among Martin County residents, and since many of those issues were discussed among staff members of the Coal Impoundment Project as also possibly legitimate concerns facing other residents living downstream from other coal waste impoundments, many of the original questions were retained in developing the WV risk assessment.

Of course, the assessment that was developed for WV also reflected the goals, objectives and the specific needs for specific information by the Coal Impoundment Project, NTTC. Consequently, other potentially relevant questions from other risk assessments were considered and reviewed in developing the instrument. These other questions that were reviewed and considered were then modified to capture the particular issues, regulations and potential compensation mechanisms associated with coal waste impoundments. In the further review and development of the survey, questions were fine-tuned and finalized out of a series of intensive review and comment sessions between our

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<sup>3</sup> General results from our Martin and Perry County survey are available online:  
[http://www.anthropology.eku.edu/MCSPiRIT/PDF/Survey\\_codebook\\_survey\\_report.pdf](http://www.anthropology.eku.edu/MCSPiRIT/PDF/Survey_codebook_survey_report.pdf)

<sup>4</sup> The reports from our past research in Martin County are available online via the following web page:  
[http://www.anthropology.eku.edu/MCSPiRIT/Martin\\_Cnty\\_Final\\_Report.html](http://www.anthropology.eku.edu/MCSPiRIT/Martin_Cnty_Final_Report.html)

<sup>5</sup> The Martin County Project Team will be administering a capacity building initiative to assess and improve the municipal water system under a \$150,000 appropriation from the Natural Resource Damage Settlement claim authorized in 2005 by the KY General Assembly. For a summary of this 2005 water testing initiative, see: Kentucky State Environmental Quality Commission. May 2005 Newsletter: *Kentucky's Environment: The bimonthly Electronic Newsletter of the Environmental Quality Commission*. "Citizens to Monitor Water Quality in Martin County," p. 6. Available online though: [www.eqc.ky.gov](http://www.eqc.ky.gov)

research team and various staff at the Coal Impoundment Project. The final draft survey then went through a final review and pilot-test by a group of citizens in Martin County, KY. Citizens from SAVE, -*Supporting Appalachia's Vital Environment* agreed to review and add public comment. The help and assistance of these four citizens from SAVE in improving the WV coal impoundment risk assessment must also be fully acknowledged at the start of this report..

With the onset of spring weather, a survey field team consisting of university faculty and university students from Eastern Kentucky University, Wheeling Jesuit University and West Virginia University was recruited and trained to conduct the WV assessment. In April 2005, university students went door-to-door and distributed surveys to citizens in Mingo and Wyoming County WV.

The following report presents the results of this survey of WV public opinion and citizen risk perceptions on coal waste, coal waste impoundments and other related issues. Policy makers and regulatory officials might do well to consider the contents of this report insofar as it provides a systematic and objective effort at capturing WV resident views and opinions that could, in turn, inform the development of more effective policy regarding impoundment regulations, compensation strategies and emergency / contingency planning over such impounding structures.

### **[National Research Council 1996 Recommendations on Expanding Public Input in Environmental Risk Assessment:](#)**

In terms of the timing of writing and issuing this report, it is important to note that the following was written after a public meeting held at the end of April 2005. During this public meeting in Williamson, Mingo County, WV, preliminary survey results were presented and discussed at length with the over 30 area residents in attendance. The frank discussion that ensued has in subtle ways helped to inform the contents and framework of this report, particularly in the writing of some of the recommendations contained here in.

Based on the feedback obtained from the public meeting, for example, one of the principal recommendations of this report is for the Coal Impoundment Project and other state and federal regulators to continue to develop methods and ways to expand public involvement in the deliberation and assessment of coal impoundment risks on local communities in West Virginia. Most especially, such risk assessments should perhaps focus specifically on people living directly downstream from such holding facilities. On the latter point, it was pointed out at the Williamson meeting by one local citizen, that a general survey of county residents cannot fully capture the legitimate and overriding concerns and worries of people living in narrow stream valleys (hollows) where an impoundment reservoir is embanked at the top of the stream head. Indeed, as this individual explained those immediately in the potential impact area and who thus, face the gravest threats in the event of an impoundment breakthrough, are naturally more likely to perceive the risks associated with impoundments differently than other county residents. Subsequently, within this report, one of the central recommendations is for the Coal Impoundment Project (CIP) and other state and federal regulators to develop additional public input methods, beyond even surveys and public meetings, to more effectively tap into and assess the specific risk concerns of the downstream impoundment public. As a first step, the CIP might do well to consider initiating a series of focus group sessions or an advisory panel of downstream citizens to even better understand some of the risk concerns of the downstream public over coal waste impoundments.

It was clearly apparent during the two hour public meeting in Williamson, Mingo County that many of those residents in attendance had knowledgeable questions and information related to impoundment risks as well as insightful questions related to the regulatory and enforcement system. It would, therefore, seem that more such in-depth discussion and deliberation with local residents should occur between the CIP and other federal and state regulators and would result no doubt result in a productive and intelligent dialogue. Additional public involvement mechanisms in the policy

discussion and policy making process would provide the CIP and regulators with a better understanding into the true scope and levity of citizen risk concerns and would facilitate channels for better risk communication via the exchange of knowledge and information between citizens, agencies as well as the coal industry.

Admittedly, as was respectfully expressed at the Williamson public meeting, such a two-way dialogue process cannot be well done via a survey. Surveys do have their advantages in generally characterizing area concerns and risk perceptions within a particular population. But even citizens who were surveyed in Mingo and Wyoming Counties recognized the limits in the method. Many of them spent more time more fully explaining their particular views related to impoundments and other community issues from their porch steps. In fact, there were plenty of residents who didn't particularly want to "fool" with the survey but rather wanted to have a meaningful conversation and in fact, there were plenty of times that members of the survey team were invited to come-in, sit-down and have a solid conversation. Unfortunately though, time constraints in delivering the questionnaire often prevented this type of meaningful interaction, communication and dialogue between residents and the research team. For other residents, who completed the survey, there were those who took time to include added written comments. Some of these comments were typed and others were carefully hand-written across several sheets. This report, in opportune places, attempts to share these written comments in an added attempt to better communicate the range of risk concerns and points of view of area residents over coal waste, coal waste impoundments and other potentially related local risk concerns beyond the rehashing of survey percentages. And again, it is highly recommended and encouraged that the Coal Impoundment Project (CIP) and other entities continue on this path of finding multiple ways to elicit meaningful public input that could, in turn, potentially inform the development of more effective regulatory and enforcement strategies that could better protect the WV public and environment.

This recommendation of expanding public input is in keeping with the National Research Council (NRC) and its oft-cited 1996 Report, *Understanding Risk: Informing Decisions in a Democratic Society*. The NRC recommended in 1996 that efforts be made to involve the public through *various mediums* in the deliberation and decision-making process of the impacts and risks associated with high hazard technologies. As the NRC well stated:

Adequate risk characterization depends on incorporating the perspectives and knowledge of the spectrum of interested and affected parties from the earliest phases of the effort to understand the risks. If a risk characterization is to illuminate the relevant facets of a risk decision and be credible to the interested and affected parties, it must address what these parties believe may be at risk in the particular situation, and it must incorporate their specialized knowledge. Often, the best way to do this is by the active involvement and representation of the parties.<sup>6</sup>

The following report represents a small effort at following through on the recommendations issued by the NRC in 1996. By involving and representing the public via a survey and their written comments as well as what citizens had to say at the Williamson public meeting, the following report attempts to better characterize and understand the issues facing area residents regarding coal waste and impoundments. Again, it is highly recommended that the CIP continue to explore multiple methods for expanding public input into the assessment of coal waste impoundment risks in WV, -the CIP's willingness to underwrite the costs of this survey project and research report is obviously a solid first step in that direction.

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<sup>6</sup> Taken from: p. 157: National Research Council. 1996. *Understanding Risk: Informing Decisions in a Democratic Society*. Washington, D.C.: National Academy Press. Other NRC report on increasing the role of lay citizens in assessing and characterizing technological and environmental risks, see also: National Research Council. 1989. *Improving Risk Communication*. Washington, D.C.: National Academy Press. National Research Council. 2000. *Waste Incineration and Public Health*. Washington, D.C. National Academy Press, Section 7: *Social Issues and Community Interactions*.

### National Research Council 2000-2002 Committee on Coal Waste Impoundments:

The following report also reiterates and reinforces, in places, some of the recommendations issued by the National Research Council (NRC) *Committee on Coal Waste Impoundments*. In other places, given our own assessment of WV public opinion, we sometimes go beyond some of the NRC recommendations. In still other places, we provide some caution over other NRC recommendations based on our survey assessment and other types of input from local citizens. As background, the NRC *Committee on Coal Waste Impoundments* was formed through a congressional act in the aftermath of the 2000 impoundment breakthrough in Martin County, KY.<sup>7</sup> The Committee mandate was to:

- to examine engineering standards for coal waste impoundments
- to provide recommendations for improving impoundment structure stabilization
- to determine the adequacy of mine maps; and
- to evaluate potential alternatives for future coal waste disposal, including the benefits of each alternative.<sup>8</sup>

The NRC report was issued in 2002 under the title, *Coal Waste Impoundments: Risks, Responses and Alternatives*. With the issuance of this report, as well as other investigative reports into the 2000 breakthrough in Martin County, KY<sup>9</sup>, there has been some important follow through in reviewing and evaluating engineering and regulatory standards over coal waste impoundments and reviewing and evaluating alternative disposal methods. The Coal Impoundment Project (CIP) at the Robert C. Byrd National Technology Transfer Center, Wheeling Jesuit University is, for example, an offshoot of some of the recommendations issued by the 2002 NRC. In 2002, via a continuing congressional resolution to the Mine Safety and Health Administration, monies were appropriated to the Coal Impoundment Project for further research and evaluation into best management engineering and regulatory practices over impoundments, as well as research into disposal alternatives, along with evaluation and assessment of coal waste impacts on the environment. Moreover, another important charge of the CIP, in accord with an NRC recommendation that emerged out of a series of public meetings that were held with coalfield residents, is to develop and improve emergency planning and response protocols for coal waste impoundments communities in West Virginia.<sup>10</sup> The following report, contracted and underwritten

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<sup>7</sup> See: Press Release. Lexington. (October 25, 2000) Rogers Seeks Independent Study of Coal Slurry ponds. The Martin County Sun, p.15:

“Rogers is seeking Congressional Approval for a 2.0 million dollar study by the National Academy of Sciences, a private non-profit organization that provides scientific and technical advice to the federal government. Funding would be provided in the budget of the federal Mine Safety and Health Administration.”

<sup>8</sup> National Research Council, Committee on Coal Waste Impoundments. 2002. *Coal Waste Impoundments: Risks, Responses and Alternatives*. Washington, D.C.: National Academy Press.p.33.

<sup>9</sup> See, for example: Triad Engineering, Inc. (March 2001) Subsurface Investigation Big Branch Slurry Impoundment Martin County, Kentucky. Triad Project No. C 00553 Submitted to: United States Department of Labor Mine Safety and Health Administration. Available online: <http://www.msha.gov/impoundments/martincounty/triad.pdf>

United States Department of Labor. Mine Safety and Health Administration Coal Mine Safety and Health. (October 17, 2001) Report of Investigation. Surface Impoundment Facility Underground Coal Mine. Non-Injury Impoundment Failure/ Mine Inundation Accident. Available online: <http://www.msha.gov/impoundments/martincounty/martincountya.pdf>

United States Department of Interior. Office of Surface Mining. (March 2002). Report on October 2000 Breakthrough a the Big Branch Slurry Impoundment. Available online: <http://www.osmre.gov/martincounty030402.htm>

<sup>10</sup> The expansion of these coal impoundment initiatives into perimeter states of Kentucky, Virginia, Ohio and Pennsylvania has been approved via a 2005 continuing resolution to the Mine Safety and Health Administration.

by the CIP, is a further effort at expanding the evaluation of coal waste impoundment regulations, alternatives and emergency action planning by including input from the WV public. Beyond the 2002 NRC, assessing the views of WV residents is, to restate, in accord with prior 1996 NRC recommendations to expand mechanisms for public input into the risk characterization and risk communication process over high hazard technologies.

### **Report Contents and Format**

The following report is divided into the following sections:

#### **Section II:**

The second section that follows explains the research design and survey methods that were used to assess and catalogue the views of West Virginia residents. Section II also includes some discussion and assessment of community views over a series of general community and quality of life issues as reported through our survey percentages. These reports on these general community / quality of life questions will allow us to understand the broader context of local public concerns and will allow us to better place citizen concerns over coal waste impoundments within the broader context of other community issues.

#### **Section III:**

The third section of this report provides our analysis of resident views regarding their risk perceptions and concerns over coal waste, coal waste impoundments and other possibly related issues. When we knocked on the doors of many residences in Mingo/ Wyoming counties, and invited persons to register their views by completing the survey, a good number of residents were initially hesitant and stated that they or someone in their family worked for the industry and that they were “for coal” or “pro coal.” These persons were especially encouraged to fill-out the survey given that this assessment was designed to be an objective, scientific assessment of overall community views relating to coal waste and coal waste impoundments. In fact, due to what we consistently heard in our initial contacts with many residents about their ties and relationship to the coal industry, we thought it important, in writing this report, to examine mining and non-mining household differences. Consequently, most of the tables within this report, within this third section (as well as the bulk of the text) focus on exploring mining and non-mining household differences in views, opinion and risk perceptions across the following coal waste topics and issues:

- Various other occupational, household, environmental and national risks
- Awareness and concern over coal waste impoundment
- Other risks and hazards associated with coal waste impoundments
- Emergency action planning and preparedness with regard to coal waste impoundments
- Compensation and regulatory strategies for coal waste impoundments
- Various alternatives to impounding coal waste
- Water quality, the watershed and other environmental concerns

#### **Concluding Section:**

The final section of this report summarizes our most interesting and important findings from our Mingo/ Wyoming County survey data and our comparisons of mining versus non-mining households. Perhaps our most resounding finding as consistently reported in the third section of this report and as summarized here in this final section, is that there seems to be very little difference in opinion and in risk perceptions across mining and non-mining households across a wider range of survey questions. In our concluding section, we summarize these consistencies and agreements between household types and also summarize and reinforce the recommendations that we have made throughout the

body of this report. Here, it is important to emphasize that given that the recommendations contained within this report and summarized at the end were born out of our observations and conversations with WV citizens and analysis of their survey responses, we feel that the set of recommendations contained within and summarized at the end, should hold some weight and implications toward improving the regulatory and emergency response structure over coal waste, coal waste impoundments and other related matters facing WV citizens. We therefore encourage policy-makers to thoughtfully consider the recommendations contained within the following: