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INNOVATIVE RADON CONTROL PROGRAM

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NC Chapter of the
Health Physics Society
November 3, 2006



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STIMULUS FOR ITS DEVELOPMENT

- During Attendance at the Annual Meeting of the Conference of the Radiation Control Program Directors in Detroit in May, 2006, Elizabeth Cotsworth, Director, USEPA Office of Radiation and Indoor Requested That We Assist Her in Renewing Interest in the Home Radon Remediation Program



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THE RESPONSE

- Many Commercial Nuclear Electric Utilities Are Proposing the Construction of New Plants.
- If These Efforts Are to be Successful, It is Imperative That They Maintain Close and Beneficial Relations With the Local Communities and Stakeholders



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THE RESPONSE

- Why Not Suggest That the Utilities Underwrite the Costs of Radon Remediation in Neighboring Communities
- Through Such a Program, They Would be Applying the ALARA Process Not Only to the Reduction of Dose Rates to Their Workers but Also to Members of the Public – A New Concept



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POSSIBLE ROLE FOR RADON MITIGATION

- With the Exception of Cigarettes, Radon is the Source of the Highest Dose to the Average Member of the U.S. Population
- At the Same Time, It can be Controlled at One of the Lowest Costs per Unit of Dose Reduction



IF HOMES, WHICH ONES?

- Homes Within the Emergency Planning Zone Could be a First Priority
- The Homes of Plant Employees Might Also Rank High
- Homes That the Monitoring Program Has Indicated Have the Highest Radon Concentrations



OTHER POSSIBLE TARGETS

- Later, it Was Found That the Public is Very Interested in Radon Concentrations in the Local Schools – so That Became a Primary Objective
- Also of Interest are Day Care Centers



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HOW MANY AND AT WHAT RATE?

- While it Might Appear That Efforts Should be Made to Remediate Tens to Hundreds of Homes, There Could be Multiple Benefits in Proceeding at a Slower Rate
- This is Especially True in Terms of Public Announcements Through the Local Media and Newspapers of Whose Home Would be Remediated That Week



PROVIDING PERSPECTIVE

Average Collective Dose (p-mSv y⁻¹)

Group	Per Plant	Dose Reduction per Remediated House	
		With Basement	Without Basement
Public	7.5	3.9	2.2
Workers	1,000		



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BENEFITS OF A SLOWER RATE

- Based on Average Data, It Would be Possible to State, Following Remediation of the Third or Fourth Home, That the Reduction in Dose to the Public was Equivalent to the Average to the Local Population due to Operation of the Nuclear Facility



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ANOTHER SIMILAR MILESTONE

- After Remediation of 300 to 400 Homes, the Collective Dose to the Public Would Have Been Reduced by an Amount in Excess of the Total to all the Workers at the Plant
- From That Point on, Construction and Operation of the Power Plant, in Conjunction With the Radon Remediation Program, Would Have Led to a Net Reduction in the Radiation Dose to the Local Population



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REMEDIATION COSTS

- The USEPA Estimates That the Cost of Installing an *Active Basement Subslab Suction System* is About \$1,250
- This Provides About a 90% Reduction
- If Less Reduction is Required, Another Approach is the Installation of Ceiling Fans
- These Yield About a 50% Reduction at a Cost of Perhaps \$150 per Fan



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PROGRAM COSTS

- If One House is Remediated per Month, the Total Annual Cost Would be About \$25,000
- If the Rate is One House per Week, the Total Annual Cost Would be Slightly in Excess of \$100,000



PROVIDING PERSPECTIVE

- For Perspective, the Cost to an Electric Utility per Day of Delay in the Time Required for Construction and Operation of a New Nuclear Plant is in Excess of \$1 Million, Taking Into Account Interest on the Loan, and Loss of Electricity Generation



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OTHER INTERESTED GROUPS

- While the Previous Discussion Has Been Limited to Nuclear Electric Utilities, Other Groups, Such as the Operators of Low-Level Radioactive Waste Disposal Facilities Have Also Expressed an Interest in Joining the Program



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PROGRAM SUPPORTERS

- The Program, as Described, Has Been Discussed With the USEPA and the Nuclear Energy Institute (NEI)
- In Both Cases, They Have Expressed a Keen Interest and Enthusiasm in Supporting the Program



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OTHER BENEFITS

- Initiation of a Radon Control Program Can Also Serve as an Outstanding Tool for Educating the Public About Radiation
- In Addition, Such a Program Would Document the Dedication of the Utilities in Their Application of the ALARA Concept