Developing the Case for Buy-Quiet Programs

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Is Buy-Quiet ethical?

- Buy-Quiet vs. Buy-Noisy?
- Proper to talk about $$/dBA with respect to hearing, which cannot be replaced?
  - $$$/finger?
  - $$$/eye?
- Fact: Buy-Noisy + HPDs is status quo
- Goal:
  - Buy-Quiet straightforward and automatic.
  - Policy directives unnecessary
Making the Case

Noise Exposure

Noise Control

Noise Control

Noise Exposure
First Exposure

- Large Industrial Client, 1995
  - 2,200 employees
  - 85 dBA @ 1m purchase specification
  - Typical TWA-8: 88 dBA

- Willing to spend $20M on noise control to offset future noise exposure costs
  - Disability claims
  - Legal expenses
NASA (2007-present)

- Buy-Quiet Process Roadmap
- Broad input from industrial hygienists and equipment manufacturers
- Integrated into NASA acquisition culture
US Navy working in parallel

- 2005: VA Disability Benefits
  - Hearing Loss: $1,102,000,000
  - 750,000 Cases
    - 78,000 New in 2005
- Noise Evaluation Acquisition Tool (2008)
NIOSH (2011)

- Adapt Buy-Quiet Process Roadmap for Construction Firms
  - Streamlined procurement
  - Large number of smaller procurements
  - Emphasize $/dBA/person/year
Coolcentric (2011)

- Quieter method of cooling IT equipment
- Slightly more expensive
- Cost of noise now one of many factors offsetting higher price.
- Marginal benefit on the order of $10k to $50k per small data center
Nuances

- Advocacy: Note other impacts not addressed
- Simplicity: Forms, process
- Accountability: Sign-offs at appropriate level of responsibility
- Empowerment: Explicit policy: spend money if necessary
- Review: Gradual progress ≠ failure
Cost of disability

- Cost of Disability
  - Dual-ear disability claims
    - 30-yr exposure at $L_{A_{EQ,8hr}}$
    - $66k$ median ($22k - $110k$)
  - Hearing Aids
    - 30 yrs, new every three years
    - Batteries
    - $39k$
  - Hearing Conservation Program
    - Assume net $0$
  - Total: $61k - $149k

excerpt,
The Noise Manual, Berger et. al.
Probability of Disability

Using ISO 1999
Compute average HL at 500, 1000, 2000, 3000 Hz
For various $L_{A_{eq,8}}$
Find fractile that gives 25 dB HL
Polynomial curve fit
Annual Cost

- 30M workers
  - 88 TWA → 85 dBA
  - $94/yr median
  - $2.8B/yr

- 2200 workers
  - High-award State
  - 87.5 TWA → 85 dBA
  - $446 - $344
  - $6.7M

Average 8-hour Exposure [dBA]

Annual Cost of Noise/Person [$]
Marginal Cost

Incremental Cost of Noise/Person/dBA [$]

Average 8-hour Exposure [dBA]

$20/dBA/yr

$70/dBA/yr
Circular Saws
Price vs. Noise Emission

![Graph showing the relationship between price and noise emission for circular saws.](image)

- **Price vs. Noise Emission**
- **Trend Line**

- **Quieter, Less Expensive**
- **Noisier, More Expensive**

- **$17/dBA**

Unit Cost (retail, $ ea., 2011 est.)
Best Value Analysis

Unit Cost + $70(L_{WA}-104)

Unit Price (retail, $ ea.)

Best Value
Buy-Quiet Process Policy Review

Firm: ____________________________
Date: ____________________________

1. Cycle just completed
☐ Hearing disability claims
☐ Accidents involving hearing loss
☐ Dosimeter trends
☐ Noisy equipment retired
☐ Noisy equipment needing retirement
☐ “Quiet” equipment purchased
☐ Vendor cooperation
☐ Marketing successes

2. Next Cycle Commitment

☐ A: Just Do It  ☐ B: Show Me the Money  ☐ C: Hold that Line

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<td>Best Value</td>
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3. Authorization

Purchasing employees are hereby authorized to invest time, effort, and money in the pursuit of low-noise purchases, in accordance with the foregoing instructions.

Signatures ____________________________________________

4. Date of Next Review: ____________________________
Conclusion

- **Buy-Quiet**
  - Temporary "necessary evil"
  - Goal: "Just Do It"

- **Noise control "at the source"**
  - Profit motive driving vendors
  - Will require reliable test methods

- **Cost-benefit analysis**
  - Can lower exposure AND save money

- **Availability of product data is critical**
  - Comprehensive labeling
Thank you