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The Two-Edged Sword:
How Emerging Technologies Affect Environmental Laws

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The other end of the telescope

- We've examined how environmental law can apply to emerging technologies (and the shortfalls of those approaches):
  - Direct Regulation - slow to respond to new events and technology; "regulatory ossification"; problems of scale (national solutions for local problems); democratic expectations for technocratic challenges)
  - Market approaches – externalities; information imbalance; transaction costs; enforcement and risk of abuse
  - Reflexive regulation – complementary to existing regulation; uses laws that encourage actors to incorporate environmental goals and self-regulate; reliance on information, disclosure and incentives; arguably more useful for prospective risks and lacks ability to contain bad actors

How Do Emerging Technologies Affect Environmental Laws?

- Technology revolutionizes law as well
  - Fingerprinting
  - DNA matching
  - Data-mining (NYC)

- Forces law to change to accommodate
  - Problems for courts – *Daubert,* gatekeeping function
  - On the horizon – neural imaging (fMRI), genomics and epigenomics

- Environmental law as well
  - In the news: IR imaging, blood analyses for generalized toxics

Framework

- Focus on disruptive technologies
- Emerging Technologies have created effects on environmental law (so far) in three rough categories
  - *Discovery and Detection*
  - *Threats*
  - *Opportunities*

Discovery and Detection

- First level: discovering existence of new threats and concerns
  - Perchlorate; dioxin; lead
  - Species delineation and variation

- Second level: Linkage or causation
  - Chemical fingerprinting (arochlors, geochemical decomposition)
  - Direct causation linkage on genomic effects and toxins
  - Environmental justice

- Third level: predictive abilities
  - NAAQS air modeling
  - TMDL modeling
  - Climate change

Creation of New Threats and Concerns

- Emerging technologies will often create new and unanticipated risks that current environmental laws simply don't address
  - Prime example: persistent/bioaccumulative/toxic chemicals (PCBs)
  - Geothermal/fracking – microquakes
  - Endocrine disruption
  - Bacterial resistance

Creation of Opportunities

- An emerging technology may work in the other direction: by making it possible to attack previously impossible problems, it creates a demand to take action

- Early example – data monitoring and collection

- Remote sensing
  - Satellite and multiband aerial surveys
  - DIAL
  - Predators?

- Nanotechnology
  - Groundwater remediation
  - Low-impact feedstocks

Questions?

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