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National Renewable Diesel Demonstration Initiative

Presenter: Nancy Johns

Mining Diesel Emissions Council
October, 2009



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Overview


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- Context
- Objective
- Consultations with stakeholders
- Program status
- Process and timeline
- Questions

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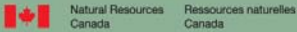


Context




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Intended Federal Regulation

- **Fuel producers and importers would be required to have:**
 - an average annual renewable fuel content of at least 5% of the volume of gasoline commencing in 2010.
 - an average annual 2% renewable fuel content in diesel fuel and heating oil by 2011 or earlier subject to technical feasibility.

Objective

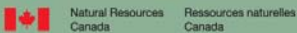




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To address industry and end-user questions about renewable diesel use by demonstrating how it will perform under Canadian conditions


Questions such as:

- cold temperature operability;
- long term storage stability;
- interaction with seasonal variations of ULSD;
- materials/engine compatibility;
- distribution and storage infrastructure, etc;

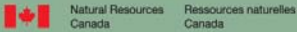


Industry Consultations




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- Consultations with stakeholders
 - Mining Association of Canada (MAC), Feb-Mar 2008
 - NRCan Metals and Minerals Sector, Mar-May 2008
- No concern with respect to an average 2% biodiesel blend in the mining sector
- NO_x emissions from higher level blends can be a concern in underground mines
- Cold weather is a minor concern in northern operations




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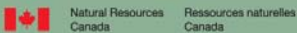


Status




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- Program launched in December 2008
- Projects underway or under development:
 - Imperial Oil: cross-sectoral questions
 - Royal Military College: formation of impurities in the fuel
 - Gensets and Long-term Storage
 - Forestry and Construction
 - Agriculture
 - Rail
 - Marine




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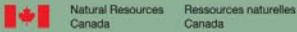


Imperial Oil




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- **Laboratory testing of biodiesel to investigate:**
 - Long-term performance in furnaces
 - Stability of biodiesel under long-term storage
 - Phase separation above the cloud point:
 - Impact on filter plugging and measures to screen for problem species
 - Effect on performance of heavy-duty diesel engines




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Formation of saturated mono-glyceride-based particles




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- To study the kinetics of SMG-based particles formation to gain knowledge on the filtration of these undesirable particles from the fuel
 - monitoring sediments in the fuel against time at various temperatures
 - determining and comparing the chemical composition of sediments using titration, chromatography and spectroscopy techniques




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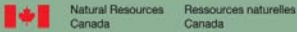


Gensets and Long-term Storage





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- To demonstrate the use of B5 under extreme cold weather conditions in electric generators in a remote Northern Manitoba community
- To investigate the impact of long-term storage on dispenser filter plugging in a vehicle fleet application
- To investigate alternative measures for testing for minor impurities in the fuel and how they may relate to long-term storage



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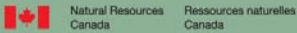


Forestry and Construction





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- To demonstrate the use of B2 and B5 in forestry equipment and B10 in construction equipment in British Columbia, in particular:
 - Impact of cold weather on operability
 - Impact on engine oil
 - Impact on fuel consumption
 - Fuel distribution to remote locations




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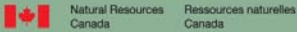


Agriculture




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- To demonstrate the use of B5 (winter) and B10 (summer), in particular:
 - the impact of off-season storage of biodiesel in equipment and storage tanks
 - up to ten months with dramatic fluctuations in temperature and humidity conditions




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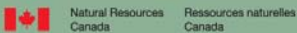


Rail




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- To demonstrate the use of B5 in locomotive operation, in particular:
 - Impact of cold weather on operability
 - Impact of direct to locomotive fuelling
 - Impact on engine components and heating systems



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Marine



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- Minimizing microbial growth in fuel tanks
- Ability of fuel coalescing equipment currently fitted on Canadian Navy ships to remove water from a biodiesel-naval distillate blended fuel
- Proposals may be submitted to address these questions



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Process and Timeline



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- Multi-stakeholder steering/technical committees guide projects
 - MAC has asked to be kept informed of results
- Projects will report findings by mid-2010 to meet regulatory timeline
- Results will be made public



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Questions and Contact Information



- Any questions?
- Contact information:
 - Nancy Johns
 - 613-943-0093
 - nancy.johns@nrcan-rncan.gc.ca
- Website:
 - oee.nrcan.gc.ca/transportation/fuels/biodiesel/NRDDI

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