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Via email: resources.development@ontario.ca

Dear Ms. Keyes,

RE: ERO#019-4770 Comments on Geologic Carbon Storage in Ontario Discussion Paper

The Chemistry Industry Association of Canada (CIAC) is pleased to provide comments in response to the Ministry of Northern Development, Mines, Natural Resources and Forestry's (NDMNRF) discussion paper on Geologic Carbon Storage in Ontario.

CIAC applauds the Ministry for exploring possible legislative changes to remove barriers to the storage of carbon dioxide, as Carbon Capture and Storage (CCS) will play an important role in lowering emissions from the chemicals manufacturing sector. CIAC recognizes that climate change and the transition to a lower carbon economy is an important global public policy issue, and that sound environmental stewardship and management of natural resources are fully consistent with good business practices. For nearly 40 years, Canada's chemistry sector has led the journey towards safe, responsible, and sustainable chemical manufacturing through its U.N.-recognized sustainability initiative, Responsible Care®. Founded in Canada in 1985, the chemistry ESG is now practiced in 73 countries and by 96 of the 100 largest chemical producers in the world. Responsible Care® compels CIAC's members to engage in safe, responsible, and sustainable chemical manufacturing and to invest in research and innovation for cleaner energy sources and reduced carbon emissions.

To further support the development of Geologic Carbon Storage in Ontario, we have prepared the following comments to highlight key opportunities and considerations surrounding the discussion paper.

Renewal and Transformation Strategy - Carbon Neutral Chemistry

Ontario's important chemistry sector stands at the crossroad between decline and renewal. Renewal and transformation are needed as a collaborative effort between the Government of Ontario, the chemistry industry, supply chain partners, local governments, and industry stakeholders. The global chemistry sector is on the cusp of two major transformations, the transformation to net-zero carbon emissions, and the transformation to a circular economy for plastics. The development and approval for CCS in Ontario provides opportunities to support the renewal and transformation of Ontario's chemistry sector for carbon neutral chemistry.

Removing barriers to CCS will significantly accelerate and deepen the already strong pace of new chemistry investments in the coming years. The world's leading chemical and plastic companies, including members of

CIAC, are exploring innovative new investments and emerging new technologies to decarbonize production. Recent Canadian decarbonization projects announced include:

- Dow Canada’s plans to build the world’s first Net Carbon Zero Circular Hydrogen Cracker and CCUS Project at Alberta Industrial Heartland.
- Nautical Energy’s proposed carbon neutral Blue Methanol Facility in Grande Prairie, Alberta.
- Petronas Energy’s \$1.3 billion Blue Ammonia Production Facility in central Alberta. In partnership with Itochu Corp. and pipeline company to explore Alberta based project of 1 million tonnes/year as a hydrogen carrier for export to Asia.
- Air Product’s \$1.3 billion net-zero Hydrogen Energy Complex at Alberta Industrial Heartland. Decision yet to be confirmed but planned for 2024
 - \$15 million committed from the Technology Innovation and Emissions Reduction Regulation (TIER).
- ATCO/Suncor Blue Hydrogen Facility at Alberta Industrial Heartland. Decision by 2024, in operation by 2028.
- Shell/Mitsubishi Blue Hydrogen Facility at the Shell Scotford Complex in the Alberta Industrial Heartland. Recently announced Memorandum of Understanding to explore building a new facility that would come online later this decade.
- Northern Petrochemical Corporation carbon neutral ammonia and methanol production facility at Grande Prairie, Alberta. This project is very similar to Nautical Energy, mentioned above, and is looking to produce 200 million tonnes/year of methanol and ammonia (60-40 split).

These are just a few examples of innovative emerging technologies required to meet our sector’s decarbonization potential and demonstrate the transformation underway. If we build on our strengths, and governments work together, the project list that precedes could be much longer and beyond just Alberta; CCS can help to enable the carbon neutral transformation to occur in Ontario and help to ensure that the landscape remains attractive for chemistry investments.

CCS as a Pathway to Mitigate GHG Emissions in Ontario

Permanent geological storage of CO₂ is a significant pathway for emissions reductions and can present an important opportunity to progress the 2030 and 2050 federal emission reduction ambitions. A 2007 report from the Ontario Ministry of Natural Resources identified areas of the province with suitable geology and capability to sequester CO₂ stating *the “potential to store up to **730 Mt of CO₂** in saline aquifers in deep geologic formations in the portions of sedimentary basins located within southern Ontario¹”*. The Sarnia-Lambton region is the anchor for the chemistry sector as it is home to over twenty operating facilities and as stated within the report¹, *“a CCS network could be developed between Hamilton, Nanticoke, and Sarnia in close proximity to storage locations and to large final emitters”*.

CCS will also play an integral role in the production of low carbon hydrogen. The federal government and several provinces have already developed their hydrogen strategies and the investment projects announced include sequestration as an integral component of hydrogen. The Alberta Hydrogen Roadmap states that *“for Alberta to deploy clean hydrogen into the economy, CCUS infrastructure must be widely available”²*. As stated above, it is clear that sequestration and low carbon hydrogen work hand in hand. As industry awaits Ontario’s

¹ Geological Sequestration of Carbon Dioxide: A Technology Review and Analysis of Opportunities in Ontario
http://www.climateontario.ca/MNR_Publications/276925.pdf

² Alberta Hydrogen Roadmap

Hydrogen Strategy, we want to ensure that sequestration will play a key role. CCS will act as one of the key drivers of growth in the chemistry sector to deliver low carbon energy that is good for the environment and good for society.

Additionally, as a sector, we need clear signals from the federal and provincial governments that CCS will continue to be an integral component of climate change policy. The province has a responsibility and accountability to ensure the appropriate environment, including helping to develop public education and support, for enablement of sequestration as a critical element for the transition to net-zero. Aligning Ontario's strategy with federal policies and regulations could create favourable market conditions that promote the development and application of technologies needed for the transition to a low carbon future.

CCS For Economic Development

Ontario's nearly \$26-billion chemistry industry is the third largest manufacturing industry in the province, directly employing over 42,000 Ontarians in well-paying jobs and supporting another 210,000 Ontario jobs in other sectors. A study completed by IHS Markit concluded that Ontario provides the least competitive investment conditions across the five major and competing chemistry regions in North America³. Chemistry manufacturing facilities have a life cycle of more than 30 years. Not securing these investments now, particularly as the province looks to post-pandemic economic recovery, means Ontario will miss out on decades of new direct and indirect jobs, tax revenues, new infrastructure, and community investments. Only a competitive business environment and a welcoming public policy environment will attract Ontario's fair share of new investment and create the high value, long-term sustainable jobs that the chemistry sector generates.

The federal government has been very supportive of CCUS and announced \$319 million invested over seven years to advance CCUS technologies, while also proposing the development of an investment tax credit. Ontario taxpayers are contributing to those funds; however, these funds are not being reinvested back to Ontario as the framework to enable CCS does not exist. If the regulatory framework does not allow for this, the investment activity is going to bypass Ontario, leaving the province's industry at a competitive disadvantage, and limiting decarbonization pathways. This will also need to occur quickly as there is a growing number of announcements for companies making investments in CCS, especially within multinational corporations.

Incorporation of CCS in Ontario's Emission Performance Standard

Currently, CCS is not counted towards lowering obligations within the Emissions Performance Standard (EPS). CCS emissions reductions should be recognized within the EPS to incent its development as the chemistry industry is a price-taking sector which needs solutions tailored to our emissions-intensive and trade exposed (EITE) concerns to ensure applications are not cost prohibitive. CCS will play a critical role in Canada to reduce industrial emissions; however, CCS is an energy intensive and expensive process that is subject to surrounding lithology, which can limit deployment locations. The chemistry industry also has many features that result in these high operating and capital costs for installation of carbon capture technologies, which include competitive global markets for production, multiple sources of emissions, and multistage manufacturing processes. The economic feasibility of sequestration projects relies on carbon pricing and eligibility in the offset credit markets.

³ Ontario Petrochemical Industry Study, IHS Markit Chemical Consulting

https://canadianchemistry.ca/wp-content/uploads/2021/11/CIAC-Ontario-Industry-Study-Executive-Summary_2021_Final.pdf

Treatment in the EPS must support the technology and should be used in the subtraction to mitigate the obligation or to mitigate a carbon charge that would otherwise be payable if they were not covered under the EPS. Ideally a carbon offset market would be enabled in Ontario to recognize CCS and other emission reductions. CIAC is encouraged to see positive amendments to the enabling legislation; however, the EPS will also need to be amended to include CCS to ensure that these projects remain economically feasible. Alberta and Saskatchewan are well recognized for their advancements in CCS, as both provinces have the appropriate regulatory frameworks and enabling legislation in place to support these types of decarbonization projects. The Alberta Emission Offset System, which contains a Quantification Protocol for CCS⁴, enables regulated facilities under the TIER program to utilize offsets against their obligations. A similar framework within the EPS should exist for CCS in Ontario to increase the compliance flexibility of regulated facilities. Additionally, we would encourage that the proceeds collected under the EPS be recycled back into industry to support and scale future CCS projects. It will be important to use the carbon pricing system (and equivalent backstops) and the Clean Fuels Regulation (CFR) to create economic incentives to facilitate the transition to a low carbon economy.

Enhanced Oil Recovery

The Ministry is proposing that changes be made to the Oil, Gas and Salt Resources Act and Mining Act that would “*narrow the prohibitions on the injection of carbon dioxide so that going forward, the prohibition would only apply to the injection of carbon dioxide for the purpose of carbon sequestration, when used in association with a project to enhance the recovery of oil or gas*”. Banning enhanced oil recovery (EOR) eliminates opportunities as there are many old oil reservoirs that would be suitable for CO₂ sequestration. To ensure a science-based approach, the Ministry should not create arbitrary restrictions that would limit appropriate reservoirs with necessary pore space, as finding suitable lithology is already a restrictive factor. If the primary driver is carbon capture, it should not be prevented if residual oil is recovered.

Clear Application and Approval Process

The discussion paper is currently missing directives on a clear application and approval process, and more broadly, a regulatory framework to fully enable CCS in Ontario. Key details around regulation of pore space, liability and regulatory approvals/permitting are not yet developed and could leverage frameworks that currently exist in Alberta and Saskatchewan. To ensure investor confidence, legislation needs to be amended to specifically allow for an approval process or granting of a license that, once gone through consultation and stakeholder review, can gain approval for a project to move forward. As there is currently no process for a CCS project in Ontario, clarity on the application, licensing, and approval process will be necessary to reduce administrative burden and ensure that the framework to move forward happens quickly, while providing confidence to the public that CO₂ will be safely permanently stored.

Furthermore, Ontario must work in a proactive manner with local communities and stakeholders to build increased understanding, receptivity, and support for CCS. CCS is a critical element in the transition to net-zero ambitions. As other jurisdictions have established CCS infrastructure, it is vital that Ontario move forward prudently and expeditiously, while providing a regulatory process for proponents that is timely, predictable and risk based.

CIAC appreciates the opportunity to provide comments on this discussion paper and is supportive of the proposal to amend the Oil, Gas and Salt Resources Act, R.S.O. 1990, c. P.12 to remove barriers to CCS. CIAC remains committed to working with government to develop effective long term regulatory policies that

⁴ Quantification protocol for CO₂ capture and permanent storage in deep saline aquifers; Government of Alberta
<https://open.alberta.ca/publications/9780778572213>

successfully achieves GHG emissions reductions without impeding innovation, investments, jobs, and growth. Through active engagement and partnership with our sector, the government can spur the innovation and demand needed to ensure Ontario successfully transitions to a low carbon future, has the potential to strengthen Ontario's chemistry sector further, and contributes to a more resilient and competitive economy.

Please feel free to contact us to discuss any questions or comments.

Sincerely,



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About Ontario's Chemistry Industry

CIAC represents leaders in Canada's chemistry and plastics sectors. Our members are innovators, solution providers, and world-class stewardship pioneers. Our companies produce industrial chemicals (including petrochemicals, inorganic chemicals and resins) and plastics in Canada, as well as companies which provide services to the Canadian chemistry and plastics industries. Ontario's \$26-billion chemistry industry, the province's third largest manufacturing industry and second largest manufacturing exporting sector, directly employs 42,000 Ontarians in well-paying jobs, supports over 210,000 Ontario jobs in other sectors, and provides important inputs to a range of key manufacturing sectors in the province including automotive, forest products, construction, and food and beverage. Ontario's chemical manufacturers must compete globally and domestically for market shares and investments.

Responsible Care

CIAC founded Responsible Care®, a chemistry ESG and the industry's globally recognized sustainability initiative, in 1985. Since then, our commitment to its ethic and principles has never wavered. At our core, we believe it is imperative "to do the right thing and be seen to do the right thing."