Executive Summary

Results of the OCMOH Action Plan on Glyphosate

Department of Health

September 2, 2016

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Corrigenda

Revised version published September 2, 2016: editorial changes were made to pages 1, 2 and 5 to more clearly explain the difference between the work of NCCEH and CAREX Canada, and to clarify that the results of their work will not be recommendations.

This version replaces the original version published July 29, 2016.

Overview

Glyphosate is a non-selective herbicide: that is, a chemical that kills almost all plants equally well. It is used for a wide variety of purposes in forestry and agriculture, and for weed control in industrial, commercial and domestic settings. It is currently the most widely-used herbicide in the world.

In March 2015, the IARC (International Agency for Research on Cancer, an agency of the World Health Organization) classified glyphosate as *"Probably carcinogenic to humans (Group 2A)"*: this was the first time that any authoritative body had declared glyphosate to be a probable carcinogen. Given the potential for human exposures due to its widespread use, staff in the Office of the Chief Medical Officer of Health (OCMOH) developed an Action Plan in December 2015. The aims of the Action Plan were to:

- Determine how other public health organizations across Canada (and elsewhere) intend to respond to the IARC classification
- Determine the overall contributions of regulatory agencies and other parties (i.e. what they will require or recommend for protective measures given the new information from IARC), and
- Research actual use patterns in New Brunswick (i.e. sectors that use glyphosate, quantities used, application timeframes and application methods) and compare these to human exposure scenarios and human health risk assessments conducted by PMRA (Pest Management Regulatory Agency, Health Canada) to determine if there are any significant differences that might warrant different advice or actions than what is required by the PMRA pesticide label

In the course of carrying out the Action Plan, OCMOH staff:

- Developed a questionnaire and surveyed all Provincial and Territorial Chief Medical Officers, as well as the state Health agencies in the US states nearest to NB
- Reviewed information from and inquired directly to Health Canada's Pest Management Regulatory Agency (PMRA)
- Reviewed information from and inquired directly to the United States Environmental Protection Agency (EPA)
- Reviewed information from pesticide regulatory bodies in the European Union
- Reviewed information from non-regulatory bodies, including:
    - Joint FAO/WHO Meeting on Pesticide Residues (JMPR)
    - CAREX Canada and the National Collaborating Centre for Environmental Health (NCCEH)
- Collected data on glyphosate use patterns in NB, and compared these to worldwide use patterns
- Analyzed usage in certain sectors in NB (Forestry, Industrial, Agricultural) in greater detail

- Overviewed current regulatory controls on glyphosate exposure in NB
- Compared NB use patterns to the scenarios assumed in the PMRA draft risk assessment, and
- Drew conclusions based on the findings of all of the above

Principal Findings

Responses from Health Agencies to the IARC Classification

- Public Health agencies across Canada and elsewhere are generally in a "wait and see" mode; most are deferring to pesticide regulatory agencies for guidance

Requirements by Regulatory Agencies

- Regulatory agencies are still grappling with glyphosate health risk assessments, as scientific consensus has not been reached

    - PMRA (Health Canada) and the EPA in the United States both began reassessments of glyphosate in 2009/10 as part of routine pesticide licence renewals but these were significantly delayed by rapidly-evolving new information and are still in progress. While initially expected in 2015, completion of these efforts is delayed until at least 2017
    - The European Union completed their scientific assessment (also begun in 2010) but it has been very controversial: several EU member states publicly opposed the findings and so an extension for the re-registration deadline was granted until the end of 2017 to permit a further review by the European Chemicals Agency (ECHA)

Initiatives by Other Parties

- The Joint FAO/WHO Meeting on Pesticide Residues (JMPR) concluded in a special meeting in May 2016 that glyphosate was unlikely to cause cancer in humans due to expected residue levels on foods grown with the use of glyphosate. However, this risk assessment did not consider any other exposure routes besides dietary exposures

- The National Collaborating Centre for Environmental Health (NCCEH) is currently developing a synthesis of regulatory information on glyphosate and other pesticides, with consideration of exposure pathways. In addition, CAREX Canada is preparing environmental / occupational exposure estimates for glyphosate. However, it is not yet clear when this information will be available.

Use Patterns in New Brunswick

- Total glyphosate use in NB appears to be less intensive than the Canadian average, but
- Glyphosate use patterns in NB are considerably different from elsewhere in the world:
    - Forestry is by far the predominant sector in NB (61% of 2014 glyphosate use)
    - Industrial use is the next most significant sector (27% of total in 2014)
    - Agricultural use is proportionately much lower than elsewhere (90% of worldwide use is in agriculture; NB's proportion was only 11% in 2014)
        - However, the proportion used on genetically-modified herbicide-tolerant crops versus conventional crops in NB is similar to the worldwide rate
- Glyphosate is used in forestry operations in New Brunswick more often than the Canadian average
    - NB ranked second among provinces (after Ontario) in hectares of forest land treated with glyphosate in 2014
        - 28% of all the forest land in Canada treated with glyphosate in 2014 was in NB, but
        - Only 14% of all the forest land in Canada harvested in 2014 (excluding QC, which does not apply forest herbicides) was in NB
- NB requires all industrial and commercial users of pesticides to have a Permit issued by DELG that makes specific restrictions beyond those imposed by PMRA. Enforcement of these conditions can be beneficial in reducing exposures of workers and the public below what is assumed in the PMRA risk assessment
- There is no information available about domestic usage of glyphosate in NB, but provincial rules under the *Pesticides Control Act* that forbid certain domestic class products should ensure that New Brunswickers have lower exposure to glyphosate from the products that are available than the exposures that are assumed in the PMRA risk assessment
- Although glyphosate is used in forestry operations in New Brunswick more often than the Canadian average, OCMOH found no evidence to suggest that this poses a risk to worker safety. A specific case study was examined which indicated that the quantities of glyphosate handled in aerial forest spraying in New Brunswick were less than the maximum quantities assumed in the PMRA risk assessment, and so the PMRA scenario is protective of New Brunswick workers in this industry

Conclusions

- The IARC classification is a hazard assessment, not a human health risk assessment (which would also require consideration of potential human exposures to the hazard), and previous health risk assessments of glyphosate did not consider cancer as a possible endpoint. Accordingly, OCMOH staff reviewed the status of several recent international health risk assessments

- However, scientific consensus regarding the risks posed by glyphosate is still elusive: PMRA in Canada and EPA in the United States have assessments still in progress that have been long-delayed by still-evolving information, and while the European Union assessment was completed it is highly controversial

- Uses of glyphosate in New Brunswick are similar to elsewhere in terms of what it is used for and how it is applied, but the use patterns in NB are considerably different:

    - Use in NB is largely in Forestry, followed by Industrial use, Agriculture and Landscaping
    - Worldwide usage is dominated by Agriculture (approximately 90% of all usage)
    - Glyphosate is used in forestry operations in New Brunswick more often than the Canadian average.

- New Brunswick has some existing controls on glyphosate and other pesticides that can help to reduce exposures, including:

    - Permit conditions for all industrial and commercial users that make specific restrictions (such as e.g., setback distances) beyond those imposed by the PMRA pesticide label
    - Prohibitions on the sale of certain Domestic class products

- A comparison of the exposure scenarios used for risk assessment in the draft PMRA reassessment to New Brunswick's use patterns and controls on exposure identified a few notable differences:

    - Although glyphosate is used in forestry operations in New Brunswick more often than the Canadian average, OCMOH found no evidence to suggest that this poses a risk to worker safety. A specific case study was examined which indicated that the quantities of glyphosate handled in aerial forest spraying in New Brunswick were less than the maximum quantities assumed in the PMRA risk assessment, and so the PMRA scenario is protective of New Brunswick workers in this industry.

    - Exposures to users of Domestic class products in NB are expected to be less than what was assumed by PMRA, due to provincial restrictions on certain Domestic class products

- Information from other agencies was identified that can help to interpret potential risks
    - JMPR undertook a health risk assessment of potential human exposure to glyphosate residues on food and concluded that glyphosate is *"unlikely to cause cancer in people via dietary exposure"*. However, this assessment considered only one possible human exposure route
    - NCCEH is in the process of producing a synthesis of regulatory information on glyphosate and other pesticides, with consideration of exposure pathways. CAREX Canada is preparing environmental / occupational exposure estimates, which will be valuable for risk assessments in future

The detailed findings of the Action Plan are presented in the full report entitled "Results of the OCMOH Action Plan on Glyphosate: A report prepared for the Acting Chief Medical Officer of Health", September 2, 2016.