

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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Forty-fourth Session

Comments of National Health Federation

The National Health Federation (NHF), a non-profit consumer organization, respectfully submits the following comments for consideration at CAC44:

One of Codex's noble goals over the past years has been to tackle the increasing problem of antimicrobial resistance. One approach taken by Codex delegations has been to eliminate certain antimicrobial agents perceived to be the culprits. That is a defensive battle that we must eventually lose.

In fact, as has already been shown, in certain countries and regions such as India, China, and Africa, antimicrobial resistance has increased considerably while clinical use of normal antibiotics has remained relatively low.ⁱ However, there is one agent that has been applied to areas of high antimicrobial resistance even in the absence of typical antibiotic use. The NHF would like to suggest that there is a far greater culprit for this modern-day plague than we had previously thought: Glyphosate.

A recent study shows that there is a discrepancy between antibiotic use in medicine and agriculture in the intertropical zone and frequency of antibiotic resistance in clinical bacteria in these countries.ⁱⁱ The researchers provide evidence that glyphosate (a herbicide but also an antibiotic drug) could be a possible driver of antibiotic resistance in countries where this herbicide is widely used because of modification of the microbial environment. Emergence of resistance in bacteria and fungi is correlated with glyphosate use in the World over the last 40 years.ⁱⁱⁱ

This is correlated with a large amount of residue of glyphosate in the environment (soil and water) and in plants.^{iv} In particular, the recent study reports, "In *E. coli*, for example, the presence of glyphosate increases the level of quinolone resistance when bacteria are brought into contact with glyphosate at sublethal doses because of the overexpression of the AcrAB efflux pump. Interestingly, there is also evidence that fosfomycin resistance in Gram-positive and Gram-negative bacteria from humans and animals has increased over the last 40 years and is higher in countries that widely used glyphosate, especially in China."^v

It is therefore hugely ironic that on the one hand Codex Alimentarius is fighting antimicrobial resistance while at the same time adopting numerous standards permitting glyphosate usage around the World that lead to antimicrobial resistance! The people of the World need antimicrobials much more than they need toxic glyphosate; perhaps the time has finally come to prohibit all glyphosate use worldwide.

ⁱ McEwen SA, Collignon PJ, "Antimicrobial resistance: a one health perspective," *Microbiol Spectr* 2018; 6: 521-47.

ⁱⁱ Raoult D, Hadjadj L, Baron SA, Rolain J-M, "Role of glyphosate in the emergence of antimicrobial resistance in bacteria?" *Journal of Antimicrobial Chemotherapy*, Vol 76, Issue 7, July 2021, Pages 1655-1657, at <https://doi.org/10.1093/jac/dkab102>. See also <https://academic.oup.com/jac/article/76/7/1655/6248211>.

ⁱⁱⁱ Van Bruggen AHC, He MM, Shin K, et al., "Environmental and health effects of the herbicide glyphosate," *Sci Total Environ* 2018; 616-617: 255-68.

^{iv} *Ibid.*

^v Raoult D, Hadjadj L, Baron SA, Rolain J-M, "Role of glyphosate in the emergence of antimicrobial resistance in bacteria?" *Journal of Antimicrobial Chemotherapy*, Vol 76, Issue 7, July 2021, Pages 1655-1657, at <https://doi.org/10.1093/jac/dkab102> and <https://academic.oup.com/jac/article/76/7/1655/6248211>. See Kurenbach B, Marjoshi D, Amabile-Cuevas CF, et al., "Sublethal exposure to commercial formulations of the herbicides dicamba, 2,4-dichlorophenoxyacetic acid, and glyphosate cause changes in antibiotic susceptibility in *Escherichia coli* and *Salmonella enterica* serovar Typhimurium," *MBio* 2015; 6: e00009-15; and Aghamali M, Sedighi M, Zahedi Bialvaei A, et al., "Fosfomycin: mechanisms and the increasing prevalence of resistance," *J Med Microbiol* 2019; 68: 11-25.