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CENTER *for* A LIVABLE FUTURE

A Response to Dr. Frank Mitloehner's White Paper,
"Livestock's Contributions to Climate Change: Facts and Fiction"

Dr. Frank Mitloehner, a Professor and Air Quality Extension Specialist at the University of California, Davis, recently released a white paper, "Livestock's Contributions to Climate Change: Facts and Fiction." In it, Dr. Mitloehner uses incomplete greenhouse gas (GHG) emissions statistics to downplay the environmental impacts of animal agriculture. The piece is critical of efforts, such as Meatless Monday, that encourage citizens to understand how their diet choices affect the environment (and their health) and begin to reduce intake of animal products. The Johns Hopkins Center for a Livable Future has provided technical assistance and scientific expertise to the national Meatless Monday campaign since 2003. Below, we address Dr. Mitloehner's mischaracterization of the evidence.

Dr. Mitloehner states that livestock production is responsible for 4.2% of U.S. GHG emissions; this calculation fails to account for several major emissions sources. He cites EPA estimates of enteric fermentation and manure management (1), but excludes emissions from the production of animal feed and forage, including nitrous oxide emissions associated with fertilizer application; land use changes; the transportation of animal feed, livestock, and food animal products; and emissions associated with imported food animal products. In the paper, Dr. Mitloehner draws conclusions based on data that do not reflect the full life cycle of animal products, but goes on to acknowledge that Life Cycle Assessment (LCA) methods are the "gold standard" for accurately measuring livestock's contributions to climate change.

Dr. Mitloehner confuses global GHG emissions with those related strictly to U.S. emissions. For example, Dr. Mitloehner contends that people are mistaken in their claims that GHG emissions from U.S. livestock production are comparable to those from transportation. Statements comparing animal agriculture and transportation, however, refer to global emissions, and these comparisons are accurate. The most recent U.N. Food and Agriculture Organization estimate is that 7.1 GT—or 14.5%—of global GHG emissions are attributable to animal agriculture (2), while 7.0 GT are attributable to transportation (3). The percentage of U.S. GHG emissions attributable to animal agriculture is not comparable to global trends—and does not reflect the magnitude of the problem—because emissions from U.S. energy and transport are exceptionally high, and emissions from deforestation for grazing lands and feed crop production occur in other countries.

Dr. Mitloehner focuses on GHG emissions and discusses resource use, without acknowledging the other ecological and public health impacts of industrial animal agriculture. He fails to account for agricultural runoff, air pollution, antimicrobial resistance, impacts to rural communities and workers, and other harms (4,5).

Dr. Mitloehner focuses on gains in efficiency per unit of livestock and fails to account for the scale of food animal production and the total environmental footprint of animal agriculture in the U.S. He states, "Improvements in livestock production efficiencies are directly related to reductions of the environmental impact." While there has been significant progress made by U.S. animal agriculture industries in terms of efficiency, the overall impact of raising approximately 10 billion food animals each year, and producing their feed, is enormous. The benefits of increased efficiencies can be offset if food animal production continues to increase and results in a larger total environmental footprint. It is thus incorrect to assume that the U.S. animal agriculture sector has reduced its total environmental footprint because it has reduced GHG emissions per unit of livestock produced.

We recognize that urgent and dramatic GHG emissions reductions are critical across all sectors, including transportation, energy, and agriculture; but even if emissions are dramatically reduced across non-agricultural sectors, if current trends in animal product consumption continue as projected, global mean temperature rise will more than likely exceed 2 degrees Celsius (6). Reducing agriculture's environmental impact will require drastic cuts in meat and dairy intake, particularly among countries—like the U.S.—with the highest per capita levels of consumption. The typical U.S. citizen consumes meat, dairy, and eggs at roughly three times the global average,* to the detriment of human health and the environment (7). Compared to the average world diet, the average American diet is associated with nearly twice the agricultural land use and GHG emissions, 80-90 percent of which are related to the consumption of animal-based foods (8). Although the problem of climate change may seem beyond the ability of individuals to make a difference, adopting Meatless Mondays is an achievable way for most Americans to take a step toward reducing their environmental footprint.

As we work to reduce anthropogenic contributions to climate change, we call on all stakeholders to accurately interpret emissions estimates and employ the best available methodology to assess the environmental impacts of animal agriculture.

This statement was written by a team of researchers at the Johns Hopkins Center for a Livable Future, including Jillian Fry, PhD, MPH; Roni Neff, PhD, SM; Bob Martin; Rebecca Ramsing, MPH, RD; Claire Fitch, MSPH; Brent Kim, MHS; Erin Biehl, MSPH; and Raychel Santo. The opinions expressed herein are our own and do not necessarily reflect the views of The Johns Hopkins University. For more information about the Center for a Livable Future, please visit www.jhsph.edu/clf or email us at clf@jhu.edu.

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*Based on UN FAO food availability estimates. These data exclude waste and other losses, overestimating actual consumption, but this method is suitable for cross-country comparisons and quantities in the food supply are appropriate for measuring environmental impacts associated with downstream food consumption behaviors (Fehrenbach KS, Righter AC, Santo RE. A critical examination of the available data sources for estimating meat and protein consumption in the USA. *Public health nutrition*, 1-10. 2015).

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