



Rocky Mountain Farmers Union

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September 10th

Director Scott Moss
Division of Labor Standards and Statistics
Colorado Department of labor and Employment
633 E 17th Ave., #200
Denver, CO 80202

Re: Creation of rules for establishing rules for heat-related stress

CDLE Rulemaking Direction from SB21-087:

THE DIRECTOR OF THE DIVISION SHALL PROMULGATE RULES THAT REQUIRE AGRICULTURAL EMPLOYERS TO PROTECT AGRICULTURAL WORKERS FROM HEAT-RELATED STRESS ILLNESSES AND INJURIES WHEN THE OUTSIDE TEMPERATURES REACH EIGHTY DEGREES OR HIGHER, WITH DISCRETION TO ADJUST REQUIREMENTS BASED ON ENVIRONMENTAL FACTORS, EXPOSURE TIME, ACCLIMATIZATION, AND METABOLIC DEMANDS OF THE JOB AS SET FORTH IN THE FEDERAL DEPARTMENT OF HEALTH AND HUMAN SERVICES CENTERS FOR DISEASE CONTROL AND PREVENTION NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH 2016 REVISED PUBLICATION: CRITERIA FOR A RECOMMENDED STANDARD, OCCUPATIONAL EXPOSURE TO HEAT AND HOT ENVIRONMENTS. THE RULES MUST BE PROPOSED ON OR BEFORE OCTOBER 31, 2021, AND ADOPTED ON OR BEFORE JANUARY 31, 2022.

Rocky Mountain Farmers Union Request:

After careful review of the [NIOSH report](#) that is referenced in the statute, RMFU proposes these suggestions for rules that will protect workers while being practical and achievable.

The report finds that the risk of heat stress injury can be reduced by employing several strategies to modify any factor in the Heat Balance Equation.

“According to the heat balance equation $[S = (M - W) \pm C \pm R \pm K - E]$..., heat stress can be reduced only by modifying one or more of the following factors: metabolic heat production, heat exchange by convection, heat exchange by radiation, or heat exchange by evaporation. Environmental heat load (C, R, and E) can be modified by engineering controls (e.g., ventilation, air conditioning, screening, insulation, and modification of process or operation) and protective clothing and equipment, whereas metabolic heat production can be modified by work practices and application of labor-reducing devices.” NIOSH report pg. 71.

The report provides the following definitions for factors in the Heat Stress Equation:

Body Heat Balance Equation: Mathematical expression of relation between heat gain and heat loss, expressed as $S = (M - W) \pm C \pm R \pm K - E$

Body Heat Storage (S): The change in heat content (either + or -) of the body.

Metabolism (M): Transformation of chemical energy into free energy that is used to perform work and produce heat.

External Work Performed (W): Physical exertion performed completing a task in a certain amount of time (definition not provided in report).

Convective Heat Transfer (C): The net heat exchange by convection between an individual and the environment.

Radiant Heat Exchange (R): The net rate of heat exchange by radiation between two radiant surfaces of different temperatures.

Conductive Heat Transfer (K): The net heat exchange involving the direct transfer of heat via direct contact between two mediums (solid, liquid, or gas) that have a temperature differential.

Evaporative Heat Transfer (E): Rate of heat loss by evaporation of water from the skin or gain from condensation of water on the skin.

Generally, for the purposes of agriculture, heat gain within a worker's body will be influenced by a number of health and lifestyle factors including acclimatization levels, the task being performed, humidity, direct sunlight, ambient temperature and evaporative sweat.

Understanding that modifying one or more of these factors can reduce risk of a heat stress injury, **we ask that employers be permitted an option to develop an individualized Heat Safety Plan that contains operating procedures meant to positively impact the Heat Balance Equation on each of their operations.**

We are greatly concerned that overly prescriptive mandates that would affect all of industry will not be feasible for individual farms, ranches and agricultural operations. Based on workflow realities, it may not always be possible to modify all the factors listed in the Heat Balance Equation. However, the report is clear that widespread modification of factors is not necessary to reduce heat stress injury. Being too prescriptive of certain practices will have unintended consequences across the diversity of Colorado agriculture. Instead, employers should be allowed to develop the best strategy or strategies for them to achieve basic heat stress protections while prioritizing worker health and balancing the unique circumstantial needs of each farm or ranch. An example of a potential pitfall would be that of a mandatory employer-provided shade structure. This could be feasible for a field crew but would be impractical for a custom harvester that has access to an air-conditioned cab and impossible for a range rider. We propose instead that each employer create protocols that would work for their unique operation. A field crew leader might provide a shade structure, the custom harvester could have access to A/C and the range rider could utilize wetted outer-garments if they have access to stock water or a nearby creek. Each of these procedures would have the same health outcome.

All of this is predicated upon a foundation of education. We support the development of educational materials by Colorado State University Extension for both employers when creating Heat Safety Plans and for employees to understand the risks of heat stress.

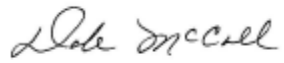
An employer heat stress curriculum should include information about how employers can protect the health of workers exposed to heat and hot environments. This should include the factors and their relationship in the Heat Balance Equation and possible modifications and interventions that can be taken to reduce risk of injury. This includes environmental heat and metabolic heat created while completing a task, proper hydration, modifications like shade, A/C, wetted outer-garments, recovery periods, clothing and protective equipment, risk factors such as drugs (OTC, prescriptions and illicit), alcohol, obesity, diabetes, etc., importance of acclimatization, importance of monitoring and reporting symptoms as well as appropriate first aid.

After the development of a Heat Safety Plan, each farm should keep it on file and the protocols should be posted in a conspicuous location for employees to view.

We appreciate this opportunity to provide comments on this issue and offer any possible further assistance on this matter. Please contact Dan Waldvogle at daniel.waldvogle@rmfu.org for questions or clarification.

Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script, reading "Dale McCall". The signature is written in dark ink and is positioned below the word "Sincerely,".

Dr. Dale McCall
RMFU President