

EXTREME WEATHER EVENTS AND HEAT-RELATED ILLNESS IN OUTDOOR EMPLOYMENT

INTRODUCTION

Present and future occurrences of extreme heat events are central to the future productivity of the agricultural industry. Extreme heat affects agricultural workers in California and contributes to heat-related illness.¹ Increased health problems of agricultural outdoor workers will reduce the productivity of the industry. Global climate change will increase the likelihood of extreme weather events such as heat waves, cold waves, storms, floods, and droughts.² The increase of extreme temperatures will contribute to heat-related illnesses.³

This Comment will address the projected climate change for California. Next, heat-related illnesses will be examined in correlation to temperature. Finally, Title 8 of the California Code of Regulations, section 3395, will be examined to determine if the heat threat to the agricultural worker and industry has been thwarted by this law.

I. PROJECTED GLOBAL AND CALIFORNIA CLIMATE CHANGE

The World Meteorological Organisation and the United Nations Environment Programme established the Intergovernmental Panel on Climate

¹ DEBORAH M. DRECHSLER ET AL., CAL. CLIMATE CHANGE CENTERS, PUBLIC HEALTH-RELATED IMPACTS OF CLIMATE CHANGE IN CALIFORNIA 4 (2006) available at <http://www.climatechange.ca.gov/research/impacts/pdfs/CEC-500-2005-197-SF.pdf>; NEIL ADGER ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, 2007: SUMMARY FOR POLICYMAKERS. CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY. CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 12 (M.L. Perry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, C.E. Hanson eds., Cambridge University Press 2007) available at http://www.ipcc.ch/ipccreports/tar/wg1/pdf/WG1_TAR-FRONT.PDF.

² ULISSES CONFALONIERI ET AL., 2007: HUMAN HEALTH. CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY. CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 413 (M.L. Perry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, C.E. Hanson eds., Cambridge University Press 2007).

³ DRECHSLER, *supra* note 1, at 4; ADGER, *supra* note 1, at 12.

Change (“IPCC”) in 1988 to provide decision-makers and those interested in climate change with objective information.⁴ According to the IPCC, humans have contributed to global climate change through the release of greenhouse gases into the atmosphere.⁵ Warmer oceans, rising sea levels, melting of glaciers, sea ice retreating in the Arctic and the Northern Hemisphere, and reduced snow cover are proof that the global temperature is increasing.⁶ The IPCC estimates that temperatures are likely to increase 1.4 to 5.8 degrees Celcius between 1990 and 2100 due to greenhouse gases.⁷ Temperature increases will have an effect on agriculture and forestry at higher latitudes, on human health, specifically, heat-related mortality, increase of infectious diseases in some areas, and increase of allergenic pollen in the Northern Hemisphere high and mid-latitudes.⁸

In its report, *Public Health-Related Impacts of Climate Change in California*, the California Climate Change Center stated that the number of extreme heat days will increase and there will be a greater number of consecutive hot days as global temperatures rise.⁹ This report examined five California cities: Los Angeles, San Francisco, San Bernardino/Riverside, Sacramento, and Fresno.¹⁰ The study calculates extreme heat and duration as the days above the climatological 90th percentile measured by the years 1961 to 1990.¹¹ This measure is referred to as the T90 threshold.¹² The report summarizes that extreme heat days tend to last a few days at the present time, but in the future these extreme heat days will last for several weeks with temperatures exceeding the T90 threshold by over ten degrees Celsius.¹³ Presently in California there are approximately thirty-six days above the T90 threshold.¹⁴ The study

⁴ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, ABOUT IPCC (2008), <http://www.ipcc.ch/about/index.htm>.

⁵ ADGER, *supra* note 1, at 9.

⁶ DANIEL L. ALBRITTON ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS, CLIMATE CHANGE 2001: THE SCIENTIFIC BASIS. CONTRIBUTION OF WORKING GROUP I TO THE THIRD ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 4 (J.T. Houghton, Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, C.A. Johnson eds., Cambridge University Press 2001) available at http://www.ipcc.ch/ipccreports/tar/wg1/pdf/WG1_TAR-FRONT.PDF.

⁷ *Id.* at 13.

⁸ ADGER, *supra* note 1, at 9.

⁹ DRECHSLER, *supra* note 1, at 4.

¹⁰ *Id.* at 5.

¹¹ *Id.* at 9.

¹² *Id.* at 10.

¹³ *Id.*

¹⁴ *Id.* at 19.

compares different models of climate change and different models of emissions ranging from low to high.¹⁵ Depending on the amount of emissions, the thirty-six days where the heat is above the T90 threshold in Los Angeles will increase from seventy to 145 days, depending on the level of emissions.¹⁶ In San Francisco, the days above the T90 threshold will increase to a minimum of eighty and a maximum of 140 days.¹⁷ In Fresno, the days above the T90 threshold will increase to a minimum of seventy days and a maximum of 120 days depending on the level of emissions.¹⁸ The mortality rates in Los Angeles between year 2035 and 2064 will be 1.6 to 3.6 times greater than today.¹⁹ The variance will depend upon the amount of emissions.²⁰ The report concludes that by the middle of the twenty-first century the occurrence of extreme temperatures that now occur thirty-six days per year will be increased 1.5 to 2.5 times.²¹ By the end of the century, the days above T90 will double to quadruple, depending upon the city and the rate of emissions.²²

California is the leading state in the United States in terms of cash receipts in agriculture.²³ The counties in California that produce the most agricultural products are, in order: Fresno, Tulare, Kern, Monterey, Merced, Stanislaus, San Joaquin, San Diego, Kings, and Imperial.²⁴ The San Joaquin Valley encompasses the top three agricultural producing counties, and according to the California Climate Tracker, the mean temperature in this region during the hottest months, July through August, was approximately seventy-nine degrees Fahrenheit.²⁵

II. HEAT-RELATED ILLNESS WILL INCREASE WITH GLOBAL WARMING

The National Institute for Occupational Safety and Health (“NIOSH”) prepared a document in response to environmental heat with recommen-

¹⁵ *Id.* at 20.

¹⁶ *Id.* at 12.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.* at 16.

²⁰ *Id.*

²¹ *Id.* at 19.

²² *Id.* at 20.

²³ CAL. DEP’T OF FARMING AND AGRIC., CALIFORNIA AGRICULTURAL RESOURCE DIRECTORY 18 (2006), available at http://www.cdffa.ca.gov/files/pdf/card/ResDir06_Overview.pdf.

²⁴ *Id.* at 19.

²⁵ WESTERN REG’L CLIMATE CTR., SAN JOAQUIN VALLEY REGION LAST 12 MONTHS (2008) available at http://www.wrcc.dri.edu/monitor/cal-mon/LATEST_GRAPHICS/LAST12_SJV.png.

dations for a standard to prevent heat illness.²⁶ Total heat stress is the sum of the heat generated by the body, or “metabolic heat,” and the heat from the environment, or “environmental heat,” minus the heat lost to the environment.²⁷ Heat illness occurs when the total internal and environmental heat in the body exceeds the capabilities of the body to maintain normal body functions.²⁸ At a certain level of heat stress the body cannot maintain a temperature to enable normal bodily functions.²⁹ It is at this stage that the risk of heat illness increases.³⁰

The level of heat that the body can tolerate depends on the capabilities of the worker.³¹ However, there is an upper limit.³² The human body must maintain a temperature of 98.6 degrees Fahrenheit plus or minus 1.8 degrees Fahrenheit to maintain normal body functions.³³ Heat stroke occurs when there is a major disruption of central nervous function appearing as unconsciousness or convulsions, a lack of sweating, and temperature in excess of 105.8 degrees Fahrenheit.³⁴ Heat exhaustion is a mild heat disorder and is usually accompanied by an increase in body temperature to 100.4 to 102.2 degrees Fahrenheit.³⁵ A person suffering from heat exhaustion will experience headaches, nausea, weakness, giddiness, and vertigo.³⁶ The ability of the body to handle the increased temperature is very individual.³⁷ Heat cramps occur when there is a loss of salt in the sweat, then abundant water intake without replenishing salt.³⁸ The cramps frequently occur in the muscles being used during the work.³⁹ Heat rashes may also occur with exposure to heat, but typically disappear with exposure to cool areas.⁴⁰

NIOSH cites a World Health Organization recommendation that it is inadvisable that body temperature exceed 100.4 degrees in prolonged

²⁶ NAT'L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, OCCUPATIONAL EXPOSURE TO HOT ENVIRONMENTS iii (1986) available at <http://www.cdc.gov/niosh/pdfs/86-113a.pdf>.

²⁷ *Id.* at 1.

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ NAT'L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, OCCUPATIONAL EXPOSURE TO HOT ENVIRONMENTS 18 (1986) available at <http://www.cdc.gov/niosh/pdfs/86-113b.pdf>.

³⁴ *Id.* at 44.

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.* at 45.

³⁹ *Id.*

⁴⁰ *Id.*

exposure to heavy work.⁴¹ Repeated exposure will cause a series of physiologic adaptations, or acclimatization.⁴² An acclimatized worker can tolerate a greater level of heat stress.⁴³ Measurement of heat stress involves analysis of the metabolic and environmental factors, which take into account individual characteristics.⁴⁴ The three areas that must be measured to determine proclivity toward heat stress are environmental factors, prediction of climatic factors, and measurement of metabolic heat.⁴⁵ The environmental factors to be considered are dry bulb (air) temperature, humidity, air velocity, radiation, and microwave radiation.⁴⁶ The formulas are complex, therefore utilization of computer programs to determine an individual's level of heat stress would be too costly and time consuming for employers, therefore, the NIOSH report discusses recommendations based upon temperature and the work load.⁴⁷ The temperatures are a threshold limit that suggest that activity of the worker be limited once the temperature is met.⁴⁸ The American Conference of Governmental Industrial Hygienists' temperature limits take into account environmental factors and metabolic factors.⁴⁹ The limits are characterized by work-load: light, moderate, or heavy.⁵⁰ The heat exposure values are eighty-six degrees Fahrenheit for light work, eighty degrees Fahrenheit for moderate work, and seventy-seven degrees Fahrenheit for heavy work.⁵¹ The limits operate under these assumptions: the worker is acclimatized, is clothed in usual clothing, has adequate water and salt intake, is capable of functioning effectively, and has a body temperature of no more than 100.4 degrees Fahrenheit.⁵² A committee formed by Occupational Safety and Health in 1973 recommended the limits to be eighty-six degrees Fahrenheit for light work, eighty-two degrees Fahrenheit for moderate work, and seventy-nine degrees Fahrenheit for heavy work.⁵³

⁴¹ NAT'L INST. FOR OCCUPATIONAL HEALTH AND SAFETY, OCCUPATIONAL EXPOSURE TO HOT ENVIRONMENTS 108 (1986) available at <http://www.cdc.gov/niosh/pdfs/86-113f.pdf>.

⁴² NAT'L INSTITUTE FOR OCCUPATIONAL HEALTH AND SAFETY, *supra* note 26, at 1.

⁴³ *Id.*

⁴⁴ NAT'L INST. FOR OCCUPATIONAL HEALTH AND SAFETY, OCCUPATIONAL EXPOSURE TO HOT ENVIRONMENTS 47 (1986) available at <http://www.cdc.gov/niosh/pdfs/86-113c.pdf>.

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ NAT'L INST. FOR OCCUPATIONAL HEALTH AND SAFETY, OCCUPATIONAL EXPOSURE TO HOT ENVIRONMENTS 86 (1986) available at <http://www.cdc.gov/niosh/pdfs/86-113e.pdf>.

⁴⁸ *Id.* at 89.

⁴⁹ *Id.*

⁵⁰ *Id.* (Light work: less than 200 kcal/h or 230 W. Moderate work: 200-350 kcal/h or 230-405 W. Heavy work: less than 350 kcal/hr or 405 W).

⁵¹ *Id.*

⁵² *Id.* at 88-89.

⁵³ *Id.* at 90.

The Armed Services recommended similar values, but rather than these temperatures being thresholds, they used them as signals to institute heat illness prevention procedures.⁵⁴ However, physiologic strain varies greatly from individual to individual but “with extreme heat stress, the variability decreases as the limits on the body’s systems for physiologic regulation are reached.”⁵⁵

The mean temperature of seventy-nine degrees in the agriculture-rich San Joaquin Valley region is an at-risk temperature for those performing heavy work, under the thresholds above. Also, the days above the T90 threshold will create a risk for those workers involved in heavy, moderate, and light work. Therefore, any regulation to require employers to monitor heat-related illness should have a temperature indication to alert the employer.

III. EXISTING CALIFORNIA LAW PRIOR TO ENACTMENT OF HEAT-RELATED ILLNESS PREVENTION REGULATION

Prior to promulgation of the present heat-related illness prevention regulation, the California Occupational Safety and Health Act of 1973 provided employer requirements for overseeing the health of employees.⁵⁶ The Act did not specifically provide for illness prevention related to heat illness.⁵⁷

Additionally, Title 8 of the California Code of Regulations, section 3203, requires every employer to “establish, implement and maintain an effective Injury and Illness Prevention Program.”⁵⁸ Although the program requires the establishment of general injury prevention procedures, there are no specific requirements for heat-related illness prevention.⁵⁹ However, even if heat-related illness prevention standards were integrated into each employer’s policy, there is no provision to monitor employers’ compliance.⁶⁰

Title 8 of the California Code of Regulations, section 3457, provides further protection for outdoor employees.⁶¹ This section is specifically applicable to agricultural workers and requires that potable water be

⁵⁴ *Id.* at 91.

⁵⁵ *Id.* at 86.

⁵⁶ *See* CAL. LAB. CODE § 6300 et seq. (Deering 2007).

⁵⁷ *Id.*

⁵⁸ CAL. CODE REGS. tit. 8, § 3203 (Barclays 2007).

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ CAL. CODE REGS. tit. 8, § 3457 (Barclays 2007).

available.⁶² Section (b) of the regulation provides a definition for potable water.⁶³ Section (c) is titled “Requirements” and states that drinking water shall be potable, provided during working hours, accessible and that drinking is to be permitted.⁶⁴ Further detailed provisions are required in the regulation for the water itself, the containers, and the method of drinking.⁶⁵ Section (c)(4) requires the employer to notify employees of the location of water and ensure that employees “drink water frequently, especially on hot days.”⁶⁶

Title 8 of the California Code of Regulations, section 3400, applies to first aid and emergency availability.⁶⁷ The statute is general and does not provide any specific prevention or treatment measures for heat-related illness.⁶⁸ A regulation to prevent heat-illness will thus not need to include potable water requirements or first aid and emergency services, as these protections are already regulated.

IV. HISTORY OF ADOPTION OF HEAT-RELATED ILLNESS PREVENTION REGULATIONS IN CALIFORNIA

The origin of regulation for heat-related illness was a petition from The American Federation of State, County and Municipal Employees union 36, which prompted the creation of the Division of Occupational

⁶² *Id.*

⁶³ *Id.* at (b) (Provides: “‘Potable Water’ means water that meets the primary standards for drinking purposes found in Title 22, California Code of Regulations, Division 4, Chapter 15.”).

⁶⁴ *Id.* at (A) (Provides: “Potable water shall be provided during working hours and placed in locations readily accessible to all employees. Access to such drinking water shall be permitted at all times.”).

⁶⁵ *Id.* at (c)(3)(B) (States: “The water shall be fresh and pure, suitably cool, and in sufficient amounts, taking into account the air temperature, humidity, and the nature of the work performed, to meet the needs of all employees. Section (C) states: The water shall be dispensed in single-use drinking cups or fountains. The use of common drinking cups or dippers is prohibited. Section (D) states: Drinking water containers shall be constructed of materials that maintain water quality, and shall be provided with a faucet, fountain, or other suitable device for drawing the water.”).

⁶⁶ *Id.* at (c)(4) (In part, states: “Reasonable use: The employer shall notify each employee of the location of the sanitation facilities and potable water and shall allow each employee reasonable opportunities during the workday to use these facilities. The employer shall ensure that employees use the sanitation facilities provided and shall inform each employee of the importance of each of the following good hygiene practices to minimize exposure to the hazards in the field of heat, communicable diseases, retention of urine, and agricultural residues: (A) Use the water and facilities providing for drinking, handwashing, and elimination; (B) Drink water frequently, especially on hot days;”).

⁶⁷ See CAL. CODE REGS., tit. 8, § 3400 (Barclays 2007).

⁶⁸ *Id.*

Safety and Health (“DOSH”) Regulatory Development Advisory Committee on Heat Stress Control.⁶⁹ The petition began with Selma Benjamin, a library worker, who brought attention to the fact that small libraries were built in Los Angeles and lacked air conditioning, resulting in temperatures sometimes exceeding 100 degrees Fahrenheit in the shipping areas.⁷⁰ Ms. Benjamin noted that workers suffered from heat exhaustion.⁷¹ Approximately twenty Southern California Unions signed the petition, which supports the fact that a heat illness standard was desired by other industries.⁷²

At the first meeting of the Cal/OSHA Regulatory Advisory Committee on Heat Stress Control, representatives from DOSH relayed information uncovered by investigation of heat-related fatalities and generated ideas to prevent such fatalities in the future.⁷³ Some of the initial factors discussed for inclusion in a regulation were: personal monitoring of health condition, training of employees and supervisors, hydration, and the importance of acclimatization.⁷⁴

The committee discussed a “tiered approach” to a regulation, meaning that employer involvement would increase as the risk of heat illness did.⁷⁵ They relied upon the 1986 Criteria Document for heat stress prepared by NIOSH to recommend that employers use the dry bulb temperature as an indicator of increased susceptibility of heat illness by workers.⁷⁶ The committee’s recommendation was that a “Heat-Alert Program” (an emergency action plan for the employer) be executed “when daily maximum temperatures exceed ninety-five degrees Fahrenheit or when the daily maximum temperature exceeds ninety degrees Fahrenheit and is nine degrees Fahrenheit or more above the maximum temperature on the preceding day.”⁷⁷ In the heat-related illness regulation adopted by California, any reference to specific temperatures was eliminated.⁷⁸ Due

⁶⁹ CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, MEETING RECORD, Dec. 9, 1999, available at <http://are.berkeley.edu/heatrdac.meet12999.html>.

⁷⁰ CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, MEETING RECORD, Jan. 25, 2000, available at <http://are.berkeley.edu/heat/heartrdac.meet12500.html>.

⁷¹ *Id.*

⁷² *Id.*

⁷³ CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, *supra* note 69.

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

to the discussion above regarding the temperature increases and risk of illness with those, it is important that the above language be added to an amended regulation. The exclusion of specific provisions for temperature provides less protection for employees, as protection is only provided for employees once they are feeling heat illness.⁷⁹ Employers are not responsible for monitoring the temperature in Title 8 of the California Code of Regulations, section 3395, as promulgated.⁸⁰ With global warming and an inevitable increase of heat waves and extreme temperatures, monitoring the daily dry bulb temperature will be essential to protect employees. Presently, the regulation requires water before heat illness occurs, but no other preventative measures are required until it does.⁸¹

The Cal/OSHA Regulatory Development Advisory Committee on Heat Stress Control met again in early 2000 to discuss further recommendations on implementation of a regulation.⁸² The importance of worker hydration was discussed.⁸³ The committee addressed the impossibility of employers ensuring adequate water intake by employees by proposing that the eventual regulation, at minimum, address a standard water requirement.⁸⁴ Supporters from California Rural Legal Assistance Foundation (“CRLA”) believed that employers must be *required* to assure that workers consume an adequate quantity of water.⁸⁵ While the regulation eventually adopted does require a minimum quantity of water be available, employers were not required to assure that employees actually consume water.⁸⁶ This would impose an unrealistic burden on the employer to monitor each employee’s water intake.⁸⁷ The committee addressed the concern that the nature of many employment situations discourages water consumption.⁸⁸ The final regulation addressed these concerns by requiring the employer to provide a sufficient quantity of water per employee.⁸⁹ Concerns regarding actual intake of water are not addressed in the adopted regulation, however, as discussed, Title 8 of the

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, *supra* note 70.

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

⁸⁷ CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, *supra* note 70.

⁸⁸ *Id.*

⁸⁹ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

California Code of Regulations section 3457 already provides that potable water be available.⁹⁰

A representative from CRLA voiced another concern: the unavailability of proximate emergency services in agriculture.⁹¹ Therefore, from CRLA's perspective, any adopted regulation should require an emergency action plan.⁹² However, inclusion of provision for emergency services does not need to be provided for in section 3395 as Title 8, section 3400 provides for first aid and emergency availability.⁹³

The committee discussed the possibility that a heat illness prevention plan be required to be incorporated into an Injury and Illness Prevention Plan that is already mandated for employers.⁹⁴ On the opposite spectrum it was supposed that the current statutory requirement under Title 8 section 3203 requiring such a plan was already sufficient to incorporate instances of heat illness because an Injury and Illness Prevention Plan requires general prevention measures, which could include prevention of heat illness.⁹⁵ The supposition that Title 8 section 3203 was sufficient was relied upon in the final regulation, as section 3395 does not require that heat illness be incorporated into the Injury and Illness Prevention Plan requirement.⁹⁶

The committee prepared the first draft of proposed legislation for heat-related illness on October 24, 2000.⁹⁷ This initial draft imposed a heavy burden on the employer. It required assessment of environmental conditions to determine the occurrence of a heat wave, while monitoring "dry bulb air temperature," "ambient water vapor pressure," "radiant heat load," "conductive heat load," and "air movement," directly relying upon recommendations in the NIOSH report.⁹⁸ It also required employers to monitor individual acclimatization, rather than require the individuals to

⁹⁰ *Id.*

⁹¹ CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, *supra* note 70.

⁹² *Id.*

⁹³ CAL. CODE REGS., tit. 8, § 3395(Barclays 2007); CAL. CODE REGS., tit. 8, § 3400 (Barclays 2007).

⁹⁴ CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, *supra* note 70.

⁹⁵ *Id.*

⁹⁶ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

⁹⁷ CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, DRAFT 1 HEAT ILLNESS PREVENTION 1, Oct. 24, 2000, *available at* <http://are.berkeley.edu/heat/hippdf.102400.pdf>. (This draft provided definitions of the following terms: "acclimatization," "conductive heat load," "dry bulb air temperature," "heat illness," "heat strain," "heat wave," "hot process," "medical assistance," "radiant heat load," "recovery pulse rate," and "remote location.").

⁹⁸ *Id.* at 2.

be aware of and monitor their own condition.⁹⁹ The draft imposed other standards upon the employer to determine what work conditions and activities contribute to heat illness and monitor those.¹⁰⁰ The equipment required to regulate environmental and metabolic heat levels would impose a significant burden on employers. Therefore, none of these employer imposed oversights were mandated in the regulation.¹⁰¹ The proposed regulation further required that water be provided in sufficient quantities, provisions for emergencies be implemented in advance, and acclimatization procedures be established.¹⁰² Lastly, the proposal included a section describing the required training of employees to alert them to preventative measures for heat illness.¹⁰³ An appendix was included in this initial draft, a checklist for employers to verify that the provisions of the regulation are met.¹⁰⁴ The final adopted regulation is far more lenient than this first draft. While the measures in this first draft were very stringent on employer involvement, some degree of employer monitoring of heat conditions should be required before heat illness occurs. Employers should be required to monitor the dry bulb temperature during the summer months and then take action to prevent heat illness.

The committee contemplated the draft on October 24, 2000, the third meeting.¹⁰⁵ At the meeting, although the committee attempted to focus discussion on the actual proposed draft, employer representatives disputed that a heat-related illness prevention standard was merited.¹⁰⁶ The concern was addressed with recognition that DOSH was aware of eleven deaths in California from 1996 to 1999 caused by heat illness.¹⁰⁷ The regulations requiring an Injury and Illness Prevention Plan did not provide the specific protection for employees from heat illness.¹⁰⁸

The committee created a second draft of the proposed regulation on October 2, 2001.¹⁰⁹ The second draft reduced the definitions down to

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁰² CAL/OSHA REGULATORY DEV. ADVISORY COMM. ON HEAT STRESS CONTROL, *supra* note 97, at 3.

¹⁰³ *Id.* at 4.

¹⁰⁴ *Id.* at 5.

¹⁰⁵ CAL/OSHA HEAT ILLNESS PREVENTION ADVISORY COMM., THIRD MEETING RECORD, Oct. 24, 2000, available at <http://are.berkeley.edu/heat/hipac.minutes.102400.pdf>.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ CAL. CODE REGS., tit. 8, § 3203 (Barclays 2007).

¹⁰⁹ CAL/OSHA HEAT ILLNESS PREVENTION ADVISORY COMM., HEAT ILLNESS PREVENTION PROPOSAL, DRAFT, Oct. 2, 2001, available at <http://are.berkeley.edu/heat/hippdf.100201.pdf>.

“acclimatization,” and “heat illness.”¹¹⁰ The new draft greatly reduced the requirements imposed on employers from the first version, and required “Hazard Identification,” “Hazard Correction,” and “Heat Illness Prevention Training.”¹¹¹ This version has been simplified, but still has strict requirements on the employer to identify and correct any potential contributors to heat illness.¹¹² The employer oversight has been eliminated from the final adopted regulation.¹¹³ It would be in the employers’ best interest to oversee the dry bulb temperature so as to prevent heat illness in workers by providing additional safeguards when the temperature exceeds a specific degree.

The committee introduced the third draft on February 15, 2002, making only minor changes, and not changing the substance of the proposed regulation’s second draft.¹¹⁴ No further action was taken on the regulation until the Occupational Safety and Health Standards Board declared a Finding of Emergency on August 22, 2005.¹¹⁵ However, prior to enactment of the emergency legislation, Assembly Bill 805 was introduced.¹¹⁶

V. INTRODUCTION OF ASSEMBLY BILL 805

The concept of a heat-related illness regulation was revisited approximately three years later.¹¹⁷ On February 18, 2005, Assembly Member Judy Chu introduced Assembly Bill 805 to be added as section 6713 to the California Labor Code.¹¹⁸ The bill, as introduced, provided more protection than section 3395. The additional protections of the proposed bill required that employees at risk for heat illness not work alone or be capable of personal, radio, or telephone contact with a responsible adult.¹¹⁹ The Assembly Bill draws upon the same topics and requirements determined by the Committee on Heat Stress Control, such as em-

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹¹⁴ CAL/OSHA HEAT ILLNESS PREVENTION ADVISORY COMM., HEAT ILLNESS PREVENTION PROPOSAL, DRAFT 3, February 15, 2002, available at http://www.dir.state.ca.us/dosh/doshreg/HEAT.COMMITTEE.DRAFT_02-15-02.pdf.

¹¹⁵ STATE OF CAL. DEP’T OF INDUS. RELATIONS, OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD, FINDING OF EMERGENCY 1 (Jan. 6, 2006).

¹¹⁶ Assem. 805, 2005-2006 Reg. Sess. (Ca. Feb. 18, 2005).

¹¹⁷ *Id.*

¹¹⁸ *Id.*

¹¹⁹ *Id.*

ployer oversight of high-risk periods for heat-illness, hydration, shade, acclimatization, emergency action plans, and training.¹²⁰

Throughout subsequent versions of the bill and eventually to the emergency and permanent regulation, the protections for the employee slowly eroded as the requirements imposed on the employer lessened. The bill as introduced provided that hourly breaks be permitted during heat waves or other instances when heat illness is likely.¹²¹ This provision was removed from the permanent regulation.¹²² The language in reference to shade was that access be maintained at all times, not merely when an employee is suffering from heat illness or when a preventative period is needed.¹²³ It is important that the original bill included a definition of heat wave, and provided additional requirements for employers to adhere to in the event of one.¹²⁴ A heat wave is an extreme weather condition that occurs when the daily maximum temperature exceeds ninety-five degrees Fahrenheit or is ninety degrees and nine degrees Fahrenheit or more above the maximum reached on the preceding days.¹²⁵ A permanent regulation defining heat wave is necessary to provide guidance to employers in recognizing the most hazardous times for heat illness. Removal of the "heat wave" definition and related provisions leaves too much of the determination of what conditions are a high risk subjectively up to the employer, thus limiting the protection of the employee. Elimination of employee protection affects the agricultural industry as a whole by reducing efficiency.

The bill went through several amendments, the first version being completed in the Assembly on March 29, 2005.¹²⁶ This first series of alterations provided additional protections and clarified the language of the original introduction.¹²⁷ Additionally, rather than just requiring that drinking water be available, this version required employers to encourage employees to drink water frequently.¹²⁸ Further, the prior vague language allowing for rest periods was specified to ten-minute allotments during heat waves and other times when risk of heat illness was high.¹²⁹ This version addressed a weakness in the final version: it clarified the concept

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹²³ Assem. 805, 2005-2006 Reg. Sess. (Ca. Feb. 18, 2005).

¹²⁴ *Id.*

¹²⁵ NAT'L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, *supra* note 26, at 11.

¹²⁶ Assem. 805, 2005-2006 Reg. Sess. (Ca. Mar. 29, 2005).

¹²⁷ *Id.*

¹²⁸ *Id.*

¹²⁹ *Id.*

of acclimatization by enumerating in the training requirement section that a lack of heat acclimatization can lead to illness (thus alerting an employer to this fact in early employment periods.)¹³⁰ Also, an additional training requirement for employers to teach employees was the effect of the use of alcohol and therapeutic and illegal drugs on the occurrence of heat illness.¹³¹ The omission of this training requirement concerning illegal drugs from the final regulation is problematic because employees will not be fully informed as to the effects of heat-related illness on their bodies. According to the NIOSH report, the use of alcohol has been commonly associated with increases in heat stroke.¹³² Some therapeutic drugs interfere with the body's mechanism to regulate temperature and can affect heat tolerance.¹³³ Further, social drugs have been known to contribute to heat disorder.¹³⁴ This version also included a non-mandatory appendix for an employer's use in educating employees about heat illness prevention.¹³⁵ Section 3395 requires employers to seek their own resources for training material as it provides none.¹³⁶ Specific quantities of water per employee were added to the regulation, as was the provision that water be potable and available at the work site.¹³⁷ Additionally, the definition for a heat wave was amended to include days when the National Weather Service forecasts a heat wave or a heat alert.¹³⁸ Any reference to heat waves or heat alerts was removed from section 3395.¹³⁹ The rate of heat illness increases with the temperature, and therefore, monitoring of temperature is imperative to prevent heat illness.¹⁴⁰

On April 6, 2005, the Assembly Committee on Labor and Employment released a bill analysis.¹⁴¹ This analysis expressed the policy behind the bill: to "require every employer, to develop a system so that employees at risk of illness do not work alone, allow workers to gradually adjust to or acclimatize to work in the heat and provide heat illness prevention training."¹⁴² Furthermore, employers would be required to

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² NAT'L INST. FOR OCCUPATIONAL HEALTH AND SAFETY, *supra* note 33, at 38.

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ Assem. 805, 2005-2006 Reg. Sess. (Ca. Mar. 29, 2005).

¹³⁶ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹³⁷ Assem. 805, 2005-2006 Reg. Sess. (Ca. Mar. 29, 2005).

¹³⁸ *Id.*

¹³⁹ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁴⁰ DRECHSLER, *supra* note 1.

¹⁴¹ Assem. 805, 2005-2006 Reg. Sess. (Ca. Apr. 6, 2005).

¹⁴² *Id.*

provide shade and hourly rest breaks during heat waves or other high-risk periods.¹⁴³ There is no provision in 3395 that employees do not work alone nor is there a provision that workers be allowed to acclimatize.¹⁴⁴ Also, there is no information in the regulation that explains when an employer can recognize when an employee is acclimatized to the heat.¹⁴⁵ Although the policy to include training has been allowed, the training materials are to be furnished by the employer.¹⁴⁶ More significantly, shade is only required when heat illness is felt or when a preventative period is needed, unrelated to any specific temperature as the policy states.¹⁴⁷ Section 3395 does not provide for hourly rest breaks; it only provides for breaks if heat illness is felt.¹⁴⁸ Since the body is more susceptible to heat illness the higher the temperature, elimination of hourly breaks during heat waves increases the risk of illnesses and fatalities.¹⁴⁹

The Assembly further amended this bill on May 27, 2005.¹⁵⁰ This version required employers to implement written Injury and Illness Prevention Policy procedures relevant to heat illness.¹⁵¹ Within the policy, the employer is required to monitor the occurrence of a heat wave.¹⁵² Training was further specified to be not only annual, but at the beginning of the work season.¹⁵³ In the enacted regulation 3395, there are no specific times when training is required.¹⁵⁴

After analysis by the appropriations board, the bill was passed to the Senate Committee on Labor and Industrial Relations with a hearing on June 22, 2005.¹⁵⁵ No changes were made to the text of the proposed bill and it was passed to the Senate Committee on Appropriations on July 11, 2005, at which time it was placed on the Suspense file.¹⁵⁶

¹⁴³ *Id.*

¹⁴⁴ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁴⁵ *Id.*

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ NAT'L INST. FOR OCCUPATIONAL SAFETY AND HEALTH, *supra* note 47, at 86.

¹⁵⁰ Assem. 805, 2005-2006 Reg. Sess. (Ca. May 27, 2005).

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.*

¹⁵⁴ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁵⁵ Assem. 805, 2005-2006 Reg. Sess. (Ca. June 22, 2005).

¹⁵⁶ Assem. 805, 2005-2006 Reg. Sess. (Ca. June 22, 2005); Assem. 805, 2005-2006 Reg. Sess. (Ca. July 11, 2005).

VI. ENACTMENT OF EMERGENCY REGULATION

Before the Senate could complete a fiscal analysis on the proposed bill, an emergency regulation was adopted. On August 22, 2005, section 3395 was added to Title 8, Division 1, Chapter 4, Subchapter 7, Group 2, Article 10 of the California Code of Regulations.¹⁵⁷ The regulation took effect August 22, 2005 and was to be in effect until December 20, 2005 unless a Certificate of Compliance was filed to extend the regulation.¹⁵⁸ The emergency regulation was enacted in response to eight instances of heat-related illness and fatalities, all in outdoor work places.¹⁵⁹ The California Division of Workers' Compensation report on occupational injuries reported that from 2000 to 2004 there were at least 300 cases of heat-related illnesses per year throughout all industries.¹⁶⁰

The emergency regulation adds proposed definitions of "environmental risk factors for heat illness," "personal risk factors for heat illness," "preventative recovery period," and, "shade" to those in previous versions contemplated by the committee and the Assembly.¹⁶¹ Subsequent to the initial emergency enactment, a proposed draft was submitted by WORKSAFE! which detailed a number of additional definitions.¹⁶² The proposed draft incorporated additional protections for the employee more than the enacted emergency regulation by defining additional factors that contribute to heat illness, detailed requirements for rest periods, provisions for communication between employers and employees, additional precautions during heat waves, emergency response procedures, and very specific training requirements.¹⁶³ It also reintroduced components that the Cal/OSHA Regulatory Development Advisory Committee on Heat Stress Control proposed in the initial draft of the regulation, imposing stricter requirements upon the employer to identify and correct risks for heat illness.¹⁶⁴ Draft seven further included a non-mandatory

¹⁵⁷ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁵⁸ STATE OF CAL. DEP'T OF INDUS. RELATIONS, *supra* note 115.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ *Id.* at 5.

¹⁶² WORKSAFE!, HEAT ILLNESS PREVENTION PROPOSAL DRAFT 7 1, September 20, 2005, available at <http://www.dir.ca.gov/dosh/doshreg/WorksafeHeatDraft7.pdf>. (The definitions added were for: "cooled area," "decontamination facilities," "heat wave," "impermeable clothing," "palatable water," "potable water," "protective clothing or equipment," and "rest and recovery period.").

¹⁶³ *Id.*

¹⁶⁴ *Id.*

appendix as initially proposed by the committee, and enumerated specific emergency and training provisions in detail.¹⁶⁵

On November 9, 2005, CRLA submitted a proposed version of the permanent legislation.¹⁶⁶ CRLA wanted a more detailed definition of acclimatization, wanted to solicit employer use of the National Weather Services Heat Index in identifying high risk of heat illness periods, and wanted to reintroduce the provisions from the initial draft imposing stricter requirements on employers to identify the high risk conditions.¹⁶⁷ CRLA further desired periodic rest periods during specific high risk times, wanted an additional clause specific to first aid and emergency care, and wanted the initial non-mandatory appendices included for the employer's use in educating employees.¹⁶⁸

On December 20, 2005, the emergency standard was renewed for an additional 120 days to allow time to adopt the permanent regulation.¹⁶⁹ On March 3, 2006, another extension was granted.¹⁷⁰ On April 26, 2006, a public hearing was held to receive comments on the proposed legislation and modifications were made, not altering the substance of the legislation.¹⁷¹ Final written comments were accepted up until May 30, 2006.¹⁷² The Occupational Safety and Health Standards Board issued a "Final Statement of Reasons" after the 45-day public comment period.¹⁷³ Only minor inconsequential changes were made to the language, changing no substantive portions of the regulation.

VII. CALIFORNIA HEAT-RELATED ILLNESS REGULATION

The final version of the regulation was promulgated as Title 8 of the California Code of Regulations, section 3395. The section states that an employer may include heat illness prevention into its Injury and Illness Prevention Program.¹⁷⁴ This provision does not require employers to

¹⁶⁵ *Id.* at 7.

¹⁶⁶ CAL. RURAL LEGAL ASSISTANCE PROPOSAL 1, September 9, 2005, available at <http://apmp.berkeley.edu/images/stories/LawsandAgencies/prop3395.crla.nov05.pdf>.

¹⁶⁷ *Id.* at 1-2.

¹⁶⁸ *Id.* at 3-4.

¹⁶⁹ STATE OF CAL. DEP'T OF INDUS. RELATIONS, OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD, FINDING OF EMERGENCY 1 (March 3, 2006).

¹⁷⁰ *Id.*

¹⁷¹ STATE OF CAL. DEPARTMENT OF INDUS. RELATIONS, OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD, NOTICE OF PROPOSED MODIFICATIONS TO CALIFORNIA CODE OF REGULATION (May 12, 2006) available at www.dir.ca.gov/oshsb.

¹⁷² *Id.*

¹⁷³ STATE OF CAL. DEP'T OF INDUS. RELATIONS, OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD, FINAL STATEMENT OF REASONS, available at www.dir.ca.gov/oshsb.

¹⁷⁴ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

implement heat-related illness prevention measures into their Injury and Illness Programs, but merely recommends it, as “may” leaves the option up to the employer.¹⁷⁵ The original assembly bill 805 *required* it.¹⁷⁶ However, DOSH does not use the Injury and Illness Program as an enforcement mechanism.¹⁷⁷ Therefore, even if heat-related illness prevention were integrated into employers’ plans, there would still be no consequences for failure to protect workers from the heat absent a specific regulation. If workers are suffering from heat illness but productivity is not substantially affected, employers may not be obliged to assure that workers are hydrated or shaded. However, the employers’ need for productivity will encourage their oversight of employees’ water intake and use of shade.

While the regulation provides a definition of “acclimatization,” it neither sets a standard requirement for workers to be acclimatized, nor prescribes a period in which employers should be especially aware of the risk factors, as did earlier versions.¹⁷⁸ The exclusion of the non-mandatory appendix also limits the employer’s access to knowledge regarding acclimatization. Individuals are more susceptible to heat illness if their bodies are not acclimatized. The regulation lacks additional protective measures for those employees that are not acclimatized.

The regulation defines what a heat illness is.¹⁷⁹ However, the regulation increases the employer’s responsibility when heat illness occurs, but does little in the form of providing adequate rest periods for employees prior to heat illness.¹⁸⁰ An examination of the history of the regulation showed that initially there were protections for employees even before they were experiencing heat illness.

The section, “Environmental risk factors for heat illness” describes the factors to consider for heat illness but does not explain how they interact.

¹⁸¹ The information on recognizing the environmental factors is left to

¹⁷⁵ *Id.*

¹⁷⁶ Assem. 805, 2005-2006 Reg. Sess. (Ca. Feb. 18, 2005).

¹⁷⁷ CAL/OSHA HEAT ILLNESS PREVENTION ADVISORY COMM., *supra* note 105, at 4.

¹⁷⁸ CAL. CODE REGS., tit. 8, § 3395 (b) (Barclays 2007) (Provides in part, “‘Acclimatization’ means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.”).

¹⁷⁹ CAL. CODE REGS., tit. 8, § 3395 (b) (Barclays 2007) (Provides, in part, “‘Heat Illness’ means a serious medical condition resulting from the body’s inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.”).

¹⁸⁰ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁸¹ *Id.* at (b) (Provides, in part, “‘Environmental risk factors for heat illness’ means working conditions that create the possibility that heat illness could occur, including air

the employer, without imposing any restrictions or requirements for their recognition.¹⁸² The additional definitions, while requiring education to employees to prevent heat related illness, do not impose any restrictions upon employers in extremely hot weather.¹⁸³

The regulation also provides for a sufficient supply of water to employees.¹⁸⁴ While this is a laudable protection for employees, enforcement of the provision is nearly impossible because employers will be unable to monitor consumption. In contrast to Title 8, section 3457, which already requires that potable water be provided, this section enumerates a specific quantity of water to be available per employee.

Further protection is provided for employees by section (d) of the regulation for shade.¹⁸⁵ The regulation does not state that employees are permitted to take regular breaks for shade, but only in the event that they are experiencing the symptoms of heat illness, or during their regularly

temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.”).

¹⁸² CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁸³ *Id.* at (b) (Provides, in part, “‘Personal risk factors for heat illness’ means factors such as an individual’s age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body’s water retention or other physiological responses to heat. ‘Preventative recovery period’ means a period of time to recover from the heat in order to prevent heat illness. ‘Shade’ means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.”).

¹⁸⁴ CAL. CODE REGS., tit. 8, § 3395 (c) (Barclays 2007) (Provides: “Provision of water. Employees shall have access to potable drinking water meeting the requirements of Sections 1524, 3363, and 3457, as applicable. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water, as described in (e), shall be encouraged.”).

¹⁸⁵ CAL. CODE REGS., tit. 8, § 3395 (d) (Barclays 2007) (Provides: “Access to shade. Employees suffering from heat illness or believing a preventative recovery period is needed, shall be provided access to an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than five minutes. Such access to shade shall be permitted at all times. Except for employers in the agricultural industry, cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if the employer can demonstrate that these measures are at least as effective as shade in allowing employees to cool.”).

scheduled breaks and lunches.¹⁸⁶ The temperature in the Central Valley during the summer months nearly exceeds the recommended threshold levels set for light, moderate, or heavy work. Thus, it is imperative that shade be available and regular rest periods be encouraged when the temperature exceeds the threshold amount. Alternatively, when the threshold temperature is met, employers can enact a heat alert system to reduce the instance of heat illness.

The final portion of the regulation addresses the training requirements for employees and supervisors.¹⁸⁷ This final version of the regulation addresses the topics for training, but does not provide the materials.¹⁸⁸ Because each individual's body reacts differently to heat, it is essential that all employees understand how to prevent and recognize heat illness in their own bodies.

Enforcement of the regulation is provided by DOSH.¹⁸⁹ The California Legislative Analyst's Office prepared a report on May 18, 2006, which indicated that California is below the national average for workers per

¹⁸⁶ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁸⁷ *Id.* at (e) (Provides: "Training. (1) Employee training. Training in the following topics shall be provided to all supervisory and non-supervisory employees. (A) The environmental and personal risk factors for heat illness; (B) The employer's procedures for complying with the requirements of this standard; (C) The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties; (D) The importance of acclimatization; (E) The different types of heat illness and the common signs and symptoms of heat illness; (F) The importance to employees of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers; (G) The employer's procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary; (H) The employer's procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider; (I) The employer's procedure for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders. (2) Supervisor training. Prior to assignment to supervision of employees working in the heat, training on the following topics shall be provided: (A) The information required to be provided by section (e)(1) above. (B) The procedures the supervisor is to follow to implement the applicable provisions in this section. (C) The procedures the supervisor is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures. (3) The employer's procedures required by subsections (e)(1)(B), (G), (H), and (I) shall be in writing and shall be made available to employees and the representatives of the Division upon request.").

¹⁸⁸ CAL. CODE REGS., tit. 8, § 3395 (Barclays 2007).

¹⁸⁹ *Id.*

Occupational Safety and Health Administration Inspectors.¹⁹⁰ California, at the time of the report, had 74,013 workers for each DOSH inspector.¹⁹¹ The average number of workers per inspector of all states is 66,354.¹⁹² Therefore, there is an issue with enforcement of the regulation. However, some progress has been made in enforcement of the regulation. In 2006, inspectors issued 108 citations to employers for violating the regulation.¹⁹³ The most significant violations were for lack of training in adherence with the regulation.¹⁹⁴ By September 17, 2007, DOSH conducted 355 heat-related job inspections.¹⁹⁵ Of those, 128 employers, about one-third, were not in compliance.¹⁹⁶

VIII. CONCLUSION

The IPCC has predicted that global temperatures will rise 1.4 to 5.8 degrees Celsius by 2100.¹⁹⁷ The California Climate Center has predicted that the number of extreme heat days in coastal cities will double under lower emissions scenarios or triple under higher emissions scenarios by the middle of the twenty first century.¹⁹⁸ For inland cities, the number of extreme heat days will triple to quadruple, depending upon the level of emissions.¹⁹⁹ California's Central Valley is the primary agricultural crop producing region in the country,²⁰⁰ and the heat in this area averages seventy-nine degrees Fahrenheit during the summer months.²⁰¹ Once the body reaches the upper limit that it can handle, heat illness will set in.²⁰² If the temperature in the most important agricultural regions is already at

¹⁹⁰ CAL. LEGISLATIVE ANALYST'S OFFICE, DATA ON CAL/OSHA INSPECTIONS 5, May 18, 2006.

¹⁹¹ *Id.* at 3.

¹⁹² *Id.*

¹⁹³ HOWARD ROSENBERG, HEAT 2007: DEALING WITH OLD RISKS AND NEW LAW 2, (2007), <http://apmp.berkeley.edu/images/stories/ManagementPractices/heat07.oldnewrisks.pdf> (last visited Jan. 19, 2008).

¹⁹⁴ *Id.*

¹⁹⁵ Andy Furillo, *Heat deaths drop as state enforces job rules: Cal-OSHA inspections have been stepped up and more fines are levied on employers*, Sacramento Bee, September 24, 2007.

¹⁹⁶ *Id.*

¹⁹⁷ ALBRITTON, *supra* note 6, at 13.

¹⁹⁸ CAL. CLIMATE CHANGE CENTERS, RECENT ADVANCES IN REGIONAL CLIMATE SYSTEM MODELING AND CLIMATE CHANGE ANALYSES OF EXTREME HEAT 9 (February 2005) *available at* <http://www.climatechange.ca.gov/research/impacts/pdfs/CEC-500-2005-197-SF.pdf>.

¹⁹⁹ *Id.*

²⁰⁰ CAL. DEP'T OF FARMING AND AGRIC. *supra* note 23.

²⁰¹ WESTERN REGIONAL CLIMATE CTR., *supra* note 25.

²⁰² NAT'L INST. FOR OCCUPATIONAL HEALTH AND SAFETY, *supra* note 47.

seventy-nine degrees on average, and the recommended thresholds for light work are eighty-six degrees Fahrenheit, eighty degrees Fahrenheit for moderate work, and seventy-seven degrees Fahrenheit for heavy work, workers who perform heavy or moderate work are already at risk. With increased temperatures, even those performing light work will be at risk. It is imperative that thresholds or “signals” such as these temperatures be included in a regulation to alert employers to the increased risk of heat illness. Once temperatures reach the signal, employers could institute a pre-determined heat alert plan that may include measures such as hourly shade and water breaks, and reduction of non-essential tasks, such as maintenance, during high risk periods. Also, with nearly one-third of current inspections resulting in violations, it is apparent that the regulation’s importance is not being relayed to employers, and it is imperative that this occur.

Assembly Bill 805 was most developed in terms of a final regulation. The emergency regulation failed to cover several important areas that the Assembly had determined were essential to the regulation. The emergency regulation removed specific enumerations of training times (every year and at start of season), removed the requirement that employers implement heat illness into their Injury and Illness Prevention Plan, removed the definition and relation of heat wave to heat illness, removed references to training employees regarding the use of illegal drugs and the results on heat illness, removed clarification of the term acclimatization, removed provisions for hourly ten minute rest periods during heat waves, and removed the provision that required employers to encourage employees to consume water. Further, the stated policy of the California State Assembly was abandoned when prompt action was required by DOSH in response to the heat-related illnesses and fatalities that encouraged the emergency regulation adoption. The emergency regulation, although the subject of public comment, failed to address all of the policy concerns relating to heat-related illness. These policy concerns are a mirror reflection of the recommendations by NIOSH.

The heat in the Central Valley of California for agricultural workers during the summer months is excessive to the point that periodic breaks once the heat has reached a determined amount are merited. The need for a stricter rule becomes more apparent in the context of global climate change as heat extremes are expected to increase, and therefore heat-related mortality rates are expected to increase. The policy of the State Assembly should be the policy behind the regulation, and the regulation should be amended to include those specific provisions that would best adhere to it.

HEATHER WARD