

Requests for Comments Compiled From the Heat Injury and Illness Prevention Notice of Proposed Rulemaking



This document includes requests for comments posed in OSHA's Notice of Proposed Rulemaking (NPRM) for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. It is provided as a resource for stakeholders to use to participate in the public comment period as they prepare their submissions. For readability, some of the questions here have been abridged or consolidated from the version(s) that appears in the NPRM. Stakeholders are encouraged to read the NPRM for the full context of the subject matter related to these questions and issues.

OSHA considers stakeholder comments during development of a final rule. Stakeholders are encouraged to respond and submit supporting information and data to any or all of the requests for comments posed in the NPRM. Stakeholders may also address any issues not specifically identified in the NPRM that they believe are important for OSHA to consider in development of the final rule.

OSHA encourages stakeholders in their public comment submissions to provide a short synopsis of the issue/question or identify the section or regulatory paragraph number [such as (a)(3)(iii)], so that OSHA can appropriately evaluate the comment.

The NPRM is available for viewing on the Federal Register web page at <https://federalregister.gov/d/2024-14824> and <https://www.regulations.gov/document/OSHA-2021-0009-4761>. Comments can be submitted to the Heat Injury and Illness Prevention rulemaking docket at <https://www.regulations.gov/comment/OSHA-2021-0009-4761>. The comment period is open until December 30, 2024.

For more information on OSHA's rulemaking process and how stakeholders can participate, visit: <https://www.osha.gov/laws-regs/rulemakingprocess>.

OSHA requests that when stakeholders provide information and comments they explain their reasoning and provide any relevant data, information, or additional studies (or citations) supporting their comments.

Health Effects

- Has OSHA adequately identified and documented the studies and other information relevant to its conclusions regarding heat-related health effects, and are there additional studies OSHA should consider?

Risk Assessment

Risk Assessment

- Are there additional data or studies OSHA should consider regarding the annual incidence of heat-related illnesses and injuries (HRIs) and heat-related fatalities among workers?
- OSHA has identified data from cohort-based and time series studies that would suggest higher incidence rates than data from surveillance datasets (e.g., BLS SOII, workers' compensation claims). Are there other data from

cohort-based or time series studies that OSHA should rely on for determining risk of HRIs to heat-exposed workers?

- Are employers aware of occupational HRIs that are not reported through BLS SOII, workers' compensation claims, or hospital discharge data? How commonly do HRIs occur that are not recorded on OSHA 300 logs?
- Are there additional data or studies that OSHA should consider regarding the extent of underreporting and underestimating of HRIs or heat-related fatalities?

Basis for Initial and High Heat Triggers

- Whether OSHA has adequately identified, documented, and correctly interpreted all studies and other information relevant to its conclusion about sensitive heat triggers;

- Whether there are additional observational studies or data that use more robust exposure metrics (e.g., more than daily maximum heat index) to retrospectively assess occupational heat exposure on the day of heat-related fatalities and nonfatal HRIs;
- Whether OSHA should consider other values for the initial and/or high heat trigger and if so, what evidence exists to support those other values;
- The appropriateness of using heat index to define the initial and high heat triggers;
- Whether OSHA should explicitly incorporate radiant heat into the initial and/or high heat triggers, and if so, how;
- Whether OSHA should explicitly incorporate clothing adjustment factors into the initial and/or high heat triggers, and if so, how;
- Whether OSHA should use different triggers for different parts of the country, and if so, how;
- The appropriateness of applying the same triggers to employers who conduct on-site measurements as opposed to employers who use forecast data; and
- Whether OSHA should consider an additional trigger specific to heat waves or sudden increases in temperature and, if so, whether there are definitions of heat waves that are simple and easy-to-apply.

Risk Reduction

- OSHA recognizes that a number of states (e.g., California, Oregon, Washington) have implemented standards to prevent HRIs and heat-related fatalities among workers. OSHA is aware that there are existing and emerging data on the efficacy of the state standards in preventing and reducing HRIs and heat-related fatalities. OSHA welcomes proposed analytical methods or analyses of existing data (see e.g., discussion in V.A., Risk Assessment of existing data sources, [www.dir.ca.gov/dosh/reports/State-OSHA-Annual-Report-\(SOAR\)-FY-2022.pdf](http://www.dir.ca.gov/dosh/reports/State-OSHA-Annual-Report-(SOAR)-FY-2022.pdf)) or unpublished data that may be used to estimate the effects of these state standards on heat-related injury, illness, and fatality rates among workers. OSHA is also interested in comments on how to account for the differences (some of which are significant) between the state standards and OSHA's proposed standard in estimating the

efficacy of OSHA's proposed standard. Are there studies, data, or other evidence that demonstrate the efficacy of and/or describe employers' or workers' experiences with these heat-specific state standards?

- Has OSHA adequately identified and documented all studies and other information relevant to its conclusion regarding the effectiveness of controls in reducing heat strain and the risk of HRIs, and are there additional studies OSHA should consider?
- Are there additional studies or evidence available that identify appropriate frequencies and durations of rest breaks for reducing heat strain and risk of HRIs?
- Are OSHA's conclusions about the effectiveness of controls in preventing HRI reasonable?

Explanation of Proposed Requirements

Scope and Application

- Whether any of the proposed exclusions of emergency response activities already covered under the standards listed in proposed paragraph (a)(2)(iii) should be covered by this proposed standard. If so, provide evidence and describe reason for why these activities should not be excluded.
- Where an employer relies on the exemption in proposed paragraph (a)(2)(iv) to exclude work activities performed in indoor work areas or vehicles where air conditioning consistently keeps the ambient temperature below 80°F, whether the standard should address situations where the air conditioning system does not function properly and the ambient temperature reaches or exceeds 80°F; for example, should certain requirements of the standard apply in this scenario? Additionally, whether the standard should specify how long the air-conditioning system can be out of order before the exemption no longer applies.
- Whether the description of sedentary work in the proposed standard is appropriate, and if not, what revisions would be appropriate;
- Whether the standard should exempt all sedentary work activities indoors or limit the exemption to only activities performed below an upper limit (e.g., below the high heat trigger) at or above which the exemption would no longer apply,

and if so, what the upper limit should be and what evidence exists demonstrating that even sedentary work performed indoors can be a hazard to workers at or above that limit; and

- Whether the exemption for sedentary work activities should be expanded to include work performed outdoors.

Definitions

- Whether the proposed definitions are appropriate, and whether any additional terms should be defined in the standard.

Heat Injury and Illness Prevention Plan (HIIPP)

- The approaches that stakeholders are taking to assess heat stress and prevent HRI in employees wearing vapor-impermeable clothing;
- Whether OSHA should specify a temperature that would trigger all or certain requirements of the standard for employees wearing vapor-impermeable clothing;
- Additional approaches that OSHA should consider to protect employees wearing vapor-impermeable clothing;
- Whether the proposed requirement to seek input and involvement from non-managerial employees and their representatives under paragraph (c)(6) is adequate, or whether the explanation should be expanded or otherwise amended (and if so, how and why);
- Whether OSHA should define “employee representative” and, if so, whether the agency should specify that non-union employees can designate a non-employee third-party (e.g., a safety and health specialist, a worker advocacy group, or a community organization) to provide expertise and input on their behalf;
- Whether it is reasonable to require the HIIPP be made available in a language that each employee, supervisor, and heat and safety coordinator understands;
- What methods and programs are available to provide employees documents and information in multiple languages, whether there are languages for which these resources are not available, and how employers can provide adequate quality control to ensure that the translations are done properly; and

- Whether individuals are available at workplaces to provide verbal translations of the plan for employees who are not literate or do not speak English.

Identifying Heat Hazards

- Whether the proposed requirement to monitor outdoor work areas with “sufficient frequency to determine with reasonable accuracy employees’ exposure to heat” is adequate or whether the standard should specify an interval of monitoring (and if so, what frequency and why);
- Whether OSHA should specify an interval of monitoring for indoor work areas (and if so, what frequency and why);
- Whether the standard should include a specific increase in outdoor temperature that would trigger the requirements in paragraph (d)(3)(iii) for indoor work areas, rather than the trigger being a “substantial increase,” and if so, what magnitude of increase;
- Whether there could be situations in which a lack of cellular service prevents an employer from using weather forecasts or real-time predictions, and if so, what alternatives would be appropriate;
- Whether the standard should require specifications related to monitoring devices (e.g., in accordance with user manuals, properly calibrated) and whether the standard should specify a permissible accuracy level for monitoring devices; and
- Whether the standard should further specify which sources of forecast data employers can use to comply with paragraph (d)(1)(i) and if so, what criteria should be used.

Requirements at or Above the Initial Heat Trigger

Drinking Water

- Whether OSHA should require a specific temperature or ranges of temperature for drinking water as some state regulations do (e.g., Colorado requires that drinking water is kept 60°F or cooler);
- Whether the agency should require the provision of electrolyte supplements/solutions in addition to water;
- Whether the requirement to provide a minimum of 1 quart per hour per employee is appropriate; and
- Whether there are any challenges to providing the required amount of drinking water (e.g., for

employees who work on foot in remote areas) and, if so, alternatives that OSHA should consider.

Break Area(s) at Outdoor Work Sites

- Whether OSHA should further specify break area requirements (e.g., square footage per employee), and what those requirements should be. Also, OSHA seeks additional comments on break areas where employers have both indoor and outdoor work areas including:
 - Whether OSHA should maintain separate break area requirements for these employees;
 - Whether OSHA should allow outdoor employees in these facilities to utilize indoor break areas under paragraph (e)(4); and
 - Whether OSHA should limit the use of indoor break areas to those that are equipped with air-conditioning.
- Whether OSHA appropriately defined shade; if not, how should OSHA define shade for outdoor break areas;
- Whether there are situations where shade is not protective and should not be permitted; and in these cases, what should be required for break areas;
- Whether there are additional options for shade that are protective, but which OSHA has not included;
- Whether there are situations when trees are not appropriate for use as shade and other measures should be required;
- Whether there are situations when employers should be permitted to use equipment as shade; in those situations, how would employers mitigate other safety concerns such as run-over incidents?
- Whether there are situations when employers should not be able to use large vehicles as shade or concerns, including those related to safety, with generally allowing the use of large vehicles for shade;
- Whether there are situations when artificial shade should not be permitted, such as during high winds;
- Whether OSHA should define or specify the levels at which air-conditioning must operate;

- Whether OSHA should require that break rooms and vehicles used for breaks be pre-cooled prior to the start of the employee's break;
- Whether there are other control options that would be both as effective as shade at reducing heat strain and feasible to implement;
- OSHA did not include separate requirements for mobile workers and seeks additional information on the feasibility and effectiveness of the proposed controls listed under paragraph (e)(3) including the use of vehicles as a break area; and
- Whether there are control options OSHA should require for vehicles, either when used for work activities or when used as a break area.

Break Area(s) at Indoor Work Sites

- Whether OSHA should specify how effective engineering controls need to be in cooling the break area(s), including other measures determining effectiveness beyond temperature and humidity;
- Whether OSHA should define a temperature differential between work areas and break areas;
- Whether OSHA should specify a temperature that break areas must be kept below; and
- Whether there are other control options that would be both effective at reducing heat strain and feasible to implement.
- OSHA did not include an option for the use of outdoor break areas for indoor work sites and seeks comment and information on the use of outdoor break areas for employees in indoor work sites, including:
 - Whether there are situations where an outdoor break area could be more effective at cooling and should be permitted; and
 - Whether certain conditions must be provided for these outdoor break areas.
- OSHA seeks additional comments on break areas where employers have both indoor and outdoor work areas. See Explanation of Proposed Requirements paragraph (e)(3), Issues and Requests for Comments.

Indoor Work Area Controls

- Whether the standard should specify how effective engineering controls need to be in cooling the work area(s);

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- Whether there are other control options (besides fan use or air conditioning) that would be both effective at reducing heat strain and feasible to implement in cases where indoor employees are exposed to ambient heat; and
- Whether there are work areas where maintaining a high ambient temperature is necessary for the work process and, if so, how OSHA should address these work areas in the standard.

Evaluation of Fan Use

- Whether OSHA has appropriately derived recommendations for fan use from Foster et al., 2022a, and whether additional data or research should be used to supplement or revise the recommendations;
- Whether OSHA should include the table derived from Foster et al., 2022a, or a similar table, in paragraph (e)(6), either as a mandatory requirement or as a compliance option; and
- Whether the standard should require alternative methods for cooling employees when fans are harmful, and if so, what alternative control measures should be used.

Acclimatization

- Data or examples of successful implementation of an acclimatization program;
- Whether the term “same or similar conditions” is sufficiently clear so that employers know when the exception to the acclimatization requirement would apply for new employees, and if not, how should OSHA clarify the requirement;
- Whether a minimum amount of heat exposure to achieve acclimatization should be specified under Option B, the gradual acclimatization option;
- Whether the requirement to demonstrate that an employee consistently worked under the same or similar conditions as the employer’s working conditions within the prior 14 days is sufficiently clear, and if not, how should OSHA clarify the requirement;
- Whether the standard should require acclimatization protocols during local heat waves, and if so, how OSHA should define heat waves;
- Whether the standard should require annual acclimatization of all employees at the beginning of each heat season (e.g., the first hot week of the year) and approaches for doing so;

- Examples that OSHA should consider of acclimatization protocols for industries or occupations where it may not be appropriate for an employee to conduct heat-exposed work tasks during the first week on the job (e.g., what activities would be appropriate for these workers to achieve acclimatization);
- Data or examples that OSHA should consider in determining if acclimatization should be required in certain situations for existing employees and examples of successful acclimatization programs for such employees;
- Which option (i.e., following requirements of the high heat trigger or gradual increase in exposure to work in heat) presented in the proposal would employers implement and whether the standard should include other options;
- Whether the standard should include any additional acclimatization requirements for employees returning after less than 14 days away from work after acute illnesses that may put them at increased risk of heat-related illness (i.e., illnesses involving fever or gastrointestinal infections), and if so, suggestions and evidence for the additional requirements; and
- Considering that employees starting or returning when the heat index is above 90°F would not receive unique acclimatization benefits if the employer chose Option A, whether the standard should specify additional requirements for these scenarios, such as breaks that are more frequent or of longer duration.
- OSHA has concerns that the proposed exception in paragraph (e)(7)(iii) could create incentives for employees to lie and/or employers to pressure employees to lie about their acclimatization status. For example, an employer could pressure an employee to report that they consistently worked under the same or similar conditions within the prior 14 days, so that the employer does not need to comply with paragraph (e) (7) during the employee’s first week on the job. These incentives could put new and returning employees at increased risk because they are not receiving appropriate protection based on their acclimatization status. OSHA seeks comments and evidence on the likelihood of this happening and what OSHA could do to address these potential troubling incentives.

Rest Breaks if Needed

- If there are specific signs or symptoms that indicate employees need a rest break to prevent overheating;
- If employers currently offer rest breaks if needed to prevent overheating, and if so, whether employees take rest breaks when needed to prevent overheating;
- The typical duration of needed rest breaks taken to prevent overheating; and
- Any challenges to providing rest breaks if needed to prevent overheating.
- In addition, OSHA encourages stakeholders to provide information and comments on the questions regarding compensation of employees during rest breaks in the Explanation of Proposed Requirements for paragraph (j), Requirements implemented at no cost to employees.

Effective Communication

- How employers currently communicate with employees working alone, including any challenges for effectively communicating with employees working alone and any situations where communication with employees working alone may not be feasible; and
- Whether OSHA should specify a specific time interval at which employers must communicate with employees and, if so, what the interval should be, and the basis for such a requirement.

Personal Protective Equipment

- OSHA requests comments and evidence as to whether there are any scenarios in which wearing cooling PPE is warranted and feasible and OSHA should require its use.

Requirements at or Above the High Heat Trigger

Rest Breaks

- Stakeholders' experiences with rest breaks required under law or by the employer, including successes and challenges with such approaches;
- Whether there is additional evidence to support a 15-minute rest break every 2 hours as effective in reducing heat strain and preventing HRIs;
- Whether OSHA should consider an alternative scheme for the frequency and/or duration of rest breaks under paragraph (f)(2). If so, what factors

(such as weather conditions, intensity of work tasks, or types of clothing/PPE) should it be based on and why;

- Whether varying frequency and duration of rest breaks based on factors such as the heat index would be administratively difficult for employers to implement and how any potential administrative concerns could be addressed;
- Whether employees could perform certain sedentary work activities in areas that meet the proposed requirements for break areas without hindering the effectiveness of rest breaks for preventing HRI, including examples of activities that would or would not be acceptable; and
- Whether OSHA should require removal of PPE that may impair cooling during rest breaks.

Observation for Signs and Symptoms

- Stakeholders' experiences with implementing observational systems such as those that OSHA is proposing and examples of the implementation of other observational systems for signs and symptoms of heat-related illness that OSHA should consider;
- Data of the effectiveness of such observation systems;
- The frequency at which observation as described in this section should occur;
- Whether there are alternative definitions of signs and symptoms of heat-related illness that OSHA should consider;
- Whether employers should be able to select a designee to implement observation in situations where it may not be possible to have a supervisor or heat safety coordinator present;
- Possible logistical concerns regarding proposed requirements for communication at least every two hours for employees who work alone at the work site; whether there are examples of successful implementation of these types of communication systems; examples of the types of technologies or modes of communication that most effectively support this type communication; and whether there are innovative approaches for keeping employees working alone safe from HRI and allowing for prompt response in an emergency; and

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- For employees who work alone at the work site, whether the employer should know the location of the employee at all times.

Hazard Alert

- Whether any additional information should be required in the hazard alert;
- The frequency of the hazard alert, particularly in locations that frequently exceed the high heat trigger; and
- Any alternatives to a hazard alert requirement that OSHA should consider.

Excessively High Heat Areas

- Whether OSHA should further specify the required location of warning signs;
- Whether OSHA should specify the wording/contents of the warning signs; and
- Whether OSHA should consider defining “excessively high heat area” as something other than a work area in which ambient temperatures regularly exceed 120°F; and whether there are resources/literature/studies/evidence available to support a different temperature threshold or other defining criteria.

Heat Illness and Emergency Response Planning

- Whether OSHA should require a minimum duration of time an employee who has experienced signs and symptoms of heat-related illness must be relieved from duty, and what an appropriate duration of time would be before returning employees to work;
- Whether OSHA should add or remove any signs or symptoms in the definitions of signs and symptoms of heat-related illness and signs and symptoms of a heat emergency in proposed paragraph (b). If so, provide clear and specific evidence for inclusion or exclusion;
- Whether paragraph (g)(3)(i) should require specific actions that the employer must take to reduce an employee’s body temperature before emergency medical services arrive, rather than merely requiring unspecified “immediate actions.” If so, describe those specific actions; and
- Whether paragraph (g)(3)(i) should prohibit certain actions to reduce an employee’s body temperature before emergency medical services arrive. If so, indicate if there is evidence or

observations that certain actions are not helpful or counterproductive.

Training

- Whether the agency should require other training topics in the standard;
- Whether the inclusion of separate training requirements for supervisors and heat safety coordinators is appropriate, or whether the duty-specific training requirements in proposed paragraph (h)(1) are sufficient;
- Whether the agency has identified appropriate triggers for supplemental training;
- Whether the agency should require annual refresher training or whether the more performance-based supplemental training requirements are sufficient; and
- Whether the agency should specify certain criteria that define the start of heat season.

Recordkeeping

- Whether six months is an appropriate and feasible duration of time to maintain records of monitoring data;
- Whether permitting employers to maintain records on devices that store data locally is appropriate; and
- Whether the standard should require retention of any other records, and if so, for what duration.

Requirements Implemented at no Cost to the Employee

- Whether OSHA should consider an alternative approach to calculating normal rate of pay for piece-rate employees, and what those alternative approaches are;
- Whether OSHA should make the calculation for piece rate workers’ normal rate of pay explicit in paragraph (j); and
- Whether proposed paragraph (j) mandating that requirements be implemented at no cost to employees is adequate, or whether there are other potential costs to employees that OSHA should take into consideration.

Dates – Timeline for Compliance

- OSHA solicits comment on the adequacy of the proposed effective and compliance dates.

OSHA aims to ensure that protective measures are implemented as quickly as possible, while also ensuring that employers have sufficient time to implement these measures. In addition, the agency is interested in whether there are any circumstances that would warrant an alternative timeframe for compliance, including a shorter timeframe, and seeks comment on approaches that would phase in requirements of the standard.

Preliminary Economic Analysis and Initial Regulatory Flexibility Analysis

Profile of Affected Industries

OSHA welcomes comment on:

- All assumptions for and estimates of the number of workers affected by the proposed workers that are discussed in this section. This includes assumptions and estimates of the number of workers that are affected by the proposed rule's exemptions. Additional data or suggestions on methodological changes the agency should consider are also welcome.
- Industries with data gaps (number of firms, number of establishments, employment, and annual receipts), along with the alternative sources and methods that OSHA used to fill in these data gaps. OSHA welcomes additional data sources or alternative methodologies to fill these data gaps.
- Additional data sources or alternative methodologies to fill data gaps in the SUSB data for industries including agriculture, local and state governments. The agency is particularly interested in data and information on the number of firms, establishments, and employment.
- Its assumption for industries where data on the number of establishments or firms is unavailable (e.g., governments, agriculture, postal services, and rail transportation), that one establishment is equal to one firm. The agency welcomes comment on this approach and suggestions for alternative approaches.
- Whether there are additional types of establishments or employees who should be considered out of scope for this analysis based on the emergency response exemption and suggestions on methodologies that might allow OSHA to better estimate this exemption.

- Estimates of the number of career firefighters that were excluded from the scope of the proposed rule based on the emergency response exemption.
- To estimate the number of establishments that qualify for the exemption for work activities in indoor work areas where temperature is maintained below 80°F, OSHA relied on assumptions related to the percentage of floorspace that is cooled. OSHA welcomes comment on whether these assumptions are reasonable. If not, the agency welcomes comment on more appropriate methodologies or data sources that might better allow OSHA to estimate which establishments would be covered by this proposed standard.
- Additional data on the percent of vehicle cabs that are sufficiently cooled for all types of drivers.
- Additional data or information on how to appropriately account for the exemptions in the proposed standard.

Costs of Compliance

OSHA welcomes comment on:

- All assumptions for and estimates of costs discussed in this section. Additional data or suggestions on methodological changes the agency should consider are also welcome.
- The agency did not explore all potential societal costs (i.e., those that do not affect the proposed standard's economic feasibility). OSHA welcomes comment on other impacts the rule may have on employees that the agency has not considered in this preliminary analysis but should consider in the final analysis.
- Assumptions and estimates of rest break non-compliance by state (and territory) described in this section. OSHA is soliciting feedback on whether the assumptions regarding compliance differences by workforce characteristics (e.g., piece rate workers, union work, state break laws, state heat laws) are reasonable or if there are alternative methods, sources of data, or assumptions that should be considered. OSHA is especially interested in existing research or data sources that can be used to evaluate the impact of rest breaks in states with existing requirements.
- Estimates of baseline non-compliance, detailed in Table VIII.C.4. OSHA seeks information and feedback on the following topics: alternative

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sources; existing employer practices in states with or without existing heat regulations; variation in non-compliance based on employer size, industry, and occupation; and the assumption that non-core industries tend to have lower baseline compliance (and higher non-compliance) than core industries.

- The agency lacks data to make a finer estimate than using outdoor weather as a proxy for indoor heat conditions but welcomes data and suggestions for improved estimation methodology.
- The data, assumptions, and methods used to estimate the number of heat-related illnesses (emergencies and non-emergencies) by sector, as well as the per-establishment incidence rates by sector. OSHA acknowledges the possibility that there may be variability in underreporting by industry sector, occupation, or some other measure and welcomes additional data or information on that possibility.
- Assumptions, methods, and data used to estimate the wages of a designated person and at-risk worker.
- All estimates of unit costs of compliance. Additional data or suggestions on methodological changes the agency should consider are also welcome.
- Input on estimates and assumptions regarding development of the HIIPP. The agency would like information and data on how these estimates correspond to the costs incurred by employers who have developed written HIIPPs, whether the time estimates are reasonable, and what method employers have taken when developing their plans.
- OSHA assumes that no employers will newly adopt the option to forgo monitoring and assume that their workplace is at or above both heat triggers, because the annual monitoring cost per establishment is relatively low compared to the costs to implement other parts of the rule that would be required for employers choosing this option. OSHA believes that most employers will find it less expensive to monitor temperatures and implement the requirements when a trigger is met or exceeded. OSHA welcomes feedback on this assumption, specifically the types of employers that might forgo monitoring and assume that their workplace is at or above both heat triggers.
- For acclimatization of new and returning workers, OSHA did not make an additional adjustment for cost savings for breaks (see Appendix A for a description of cost savings methodology) as the conditions of those additional rest breaks are different (i.e., different temperature range-rest break combination) than those at which the estimates of labor productivity loss due to pacing in the heat were calculated. To the extent that pacing is reduced for employees undergoing acclimatization protocols, this could overstate the costs of acclimatization. OSHA welcomes comment on this issue and whether the agency should extend the potential cost savings from reduced pacing to workers during their acclimatization period.
- The methodology and data used to estimate the number of hours that workers are exposed to heat at or above the heat trigger(s). OSHA's methodology may overstate the number of rest breaks employers need to provide since there may be some days where the heat triggers are met or exceeded but for shorter periods of time. For example, if the high heat trigger is met or exceeded for less than two hours, the requirement to provide a scheduled rest break would not be triggered. Additionally, employees exposed to heat at or above the initial heat trigger for shorter periods of time are likely to need fewer if-needed rest breaks. A scheduled lunch break in the middle of the day may also be sufficient to satisfy the break requirement on days when the high heat trigger is met for only a portion of the day. OSHA welcomes comment on this methodology and recommendations on alternative approaches.
- The assumption that an average employee will take one ten-minute if-needed rest break when the temperature is at or above the initial heat trigger and the assumptions for travel time to and from the break area for indoor and outdoor settings.
- Existing methods of two-way communication between employees and employers.
- OSHA assumes that the cost of lone workers communication with supervisors is the same as the cost of observation for the purposes of this analysis. The agency welcomes comment on this assumption and additional data that would allow OSHA to better estimate the costs for communication with lone workers.

- The estimate of new workers requiring acclimatization as well as data that would allow this parameter to be better estimated.
- The estimate of returning workers requiring acclimatization and information or data sources that might better allow the agency to identify employees returning from absences of more than 14 days.
- Input from the public regarding all aspects of the sensitivity analysis, including any data or information regarding the accuracy of the preliminary estimates of compliance costs and benefits and how the estimates of costs may be affected by varying assumptions and methodological approaches.
- OSHA acknowledges that its estimates of workday hours exceeding each of the heat triggers may be imprecise in states where the climate varies widely between different parts of the state. However, the agency lacks data that would allow for employers and employees to be more precisely located within a given state. OSHA welcomes comment on this issue and suggestions for methodologies to more precisely represent employee exposure within states.
- The best available evidence OSHA employed in this analysis showed no days exceeding the high heat trigger in Alaska and therefore, the agency estimated that most industries in Alaska will not have costs of compliance for requirements at or above the high heat trigger. This may understate the effects in establishments where employees are exposed to process heat. However, OSHA identified no data that would allow an adjustment for this consideration but welcomes comment on this issue.
- OSHA expects to provide training materials and templates. To the extent that employers are able to incorporate and develop training using those materials and templates, OSHA may have overestimated the amount of time needed to develop training. OSHA welcomes comment on this issue, how training is generally developed, how long that development takes, and/or information about any other costs related to training development.
- OSHA welcomes feedback on the primary cost savings approach and the alternate approaches. OSHA also welcomes suggestions for other

approaches to estimate cost savings related to the provision of rest breaks.

Economic Feasibility

OSHA welcomes comment on:

- What the likely practical effects of the proposed standard would be in various industries. To the extent commenters believe the proposed standard poses an issue of economic feasibility, the agency welcomes comment on how the proposed standard should be modified to achieve greater feasibility.

Benefits

OSHA welcomes comment on:

- The estimates of avoided heat-related fatalities and HRIs, the underreporting adjustment, data sources, and methodologies employed in this section. The agency welcomes additional studies, data, and methodologies that OSHA should consider in the final economic analysis.
- The assumption that the proposed standard is equally effective at preventing fatalities and HRIs that are currently reported in the economic data and those that are currently unreported.
- The appropriateness of the value of a statistical injury (VSI) estimate given that HRIs may be less severe than other injuries and illnesses typically considered in the VSI derivation. The agency welcomes suggestions on alternative VSI estimates for HRIs as well as supporting data, methodologies, or studies that would help the agency refine this estimate.

Initial Regulatory Flexibility Analysis

OSHA welcomes comment on:

- Effects of the proposed standard on small and very small entities.
- The inclusion of large non-profits in the profile of SBA/RFA defined small entities. The costs of this proposed standard are largely employee-based and the agency has not found there to be feasibility concerns for entities of any size. Therefore, the agency believes that including large non-profits in the profile of SBA/RFA defined small entities would not alter the findings of the Initial Regulatory Flexibility Analysis. OSHA welcomes comment regarding this determination.

- Additional burden reducing alternatives that the agency should include in its regulatory flexibility analysis, including identifying which would be most useful to assess impacts on small entities.

Technological Feasibility

OSHA requests comments on the appropriateness of the preliminary determinations contained in this analysis.

Regarding the feasibility of monitoring, OSHA seeks additional comments and information regarding:

- The feasibility of measuring HI in indoor environments and where heat-generating processes occur.
- The use of WBGT including the identification of situations in which WBGT would or would not be practical or pose challenges for employers to measure.

Regarding the feasibility of controls, OSHA seeks additional comments and information on the following:

- Whether there are other controls or technologies that may be available to protect workers against heat hazards.
- The technological feasibility of other engineering control options not discussed here for indoor, outdoor, and mobile worksites.
- The agency's preliminary determination that it is technologically feasible, using commercially available products and technology, for employers with mobile work sites to provide workers with shaded or air-conditioned areas, as well as additional data and information on other feasible control options available.
- The feasibility of dehumidification as a control option for indoor workplaces.
- Areas where employers have determined that isolation of heat producing equipment is not feasible and alternatives employers have utilized to reduce employee exposures.
- The current use of air conditioning in the industries covered under the scope of the rule.
- Additional ways employers have utilized air conditioning for outdoor workers and obstacles encountered, if any.
- The current use and application of fans in both indoor and outdoor settings.

- Work settings where the use of fans is not feasible due to contamination concerns and information on what controls, including the use of air conditioning, employers use to prevent HRIs in these settings.
- Indoor work settings without heat-generating processes that may experience temperatures above 102°F and information on what controls employers implement when fan use is contraindicated or when temperatures exceed 102°F.

Requirements for States with OSHA-Approved State Plans

OSHA welcomes comment on:

- Its preliminary conclusion that this proposed rule would increase protections beyond those provided by most current standards in State Plans.