

An overview and impact assessment of OSHA large dairy local emphasis programs in New York and Wisconsin

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Background: Farming has been exempted from most labor regulations and shielded from regulatory scrutiny by the Occupational Safety and Health Administration (OSHA). Yet, agriculture and dairy in particular, has relatively high injury and fatality rates.

Methods: A recent shift in OSHA's approach to agricultural worker safety and health includes two dairy-focused Local Emphasis Programs (LEPs), one launched in Wisconsin in 2011 and the other in New York in 2014. We examine data from LEP-related, OSHA consultations and inspections as well as non-governmental audit programs, and review farmer perceptions about the LEP.

Results: Inspections conducted by OSHA and private consultation programs highlight the presence and variety of hazards on dairy farms in Wisconsin and New York.

Conclusion: The LEPs helped raise dairy producers' awareness of inherent hazards and methods to correct them. Farmers cited the LEP as beneficial, identifying it as a catalyst to reduce hazards on their farms.

KEY WORDS

agricultural injuries and fatalities, dairy, immigrant workers, OSHA, regulations

1 | INTRODUCTION

Farming has been exempted from most labor regulations and shielded from regulatory scrutiny by the Occupational Health and Safety Administration (OSHA). Yet, agriculture is frequently cited as a particularly hazardous U.S. industry.^{1,2} Farming (as apart from fishing and forestry) was recently ranked the sixth most dangerous industry in the U.S. Dairy farms, in particular, have been recognized for their

relatively high rates of worker injury and fatality.³ Numerous contributing factors have been identified in regards to occupational injury events and include animal handling, machinery, equipment, falls/slips, and toxic exposures, such as manure gases.^{4–6}

The increasing cost and shrinking profit margins associated with operating dairy farms have led dairy producers to abandon dairy or expand and modernize. In doing so they have increasingly turned to immigrant labor to fulfill production needs. Immigrant labor now

Institutions at which the work was performed: National Farm Medicine Center, Marshfield Clinic Research Foundation; Migrant Clinicians Network; New York Center for Agricultural Medicine and Health, Mary Imogene Bassett Hospital; New York State Department of Labor.

accounts for an estimated 51% of all dairy labor and dairies that employ immigrants produce 79% percent of the U.S. milk supply.⁷ These immigrants are largely Spanish-speaking men with limited formal education.⁸⁻¹⁰

While overall injury and death rates for U.S. industry have fallen, fatal and non-fatal injury trends have remained stubbornly high in the U.S. dairy industry as documented by OSHA. Figure 1 illustrates U.S. Bureau of Labor Statistics data regarding documented non-fatal injury for dairy cattle and milk production (NAICS code 112120), as compared to general rates for private industry data over the years 2000-2014.

As indicated in the line graph in Figure 1, although considerable fluctuations can be observed in the number and rate of non-fatal injuries in dairy workers, the non-fatal injury trends for dairy workers have not mirrored the steady decline in non-fatal injury rates that have been documented in private industry.

Documented fatalities among dairy farms in the U.S. show an equally steady trend, with New York and Wisconsin dairy farms representing a relatively large proportion of U.S. dairy worker occupational deaths in particular (Table 1). As indicated in Table 1, Wisconsin and New York represent a large proportion of U.S. dairy worker fatalities. The combined number of deaths among dairy workers in Wisconsin and New York averaged 39% of the total dairy worker fatalities from 2000 to 2014. Of the 659 dairy fatalities reported from 2000 through 2014 on farms with more than 11 employees, 627 (95%) were males, 16 (2.5%) were women, and 16 (2.5%) were unknown.

A long history of agricultural exceptionalism has kept workers from benefiting from laws, such as the National Labor Relations Act,

which allows for collective bargaining, and the Fair Labor Standards Act, which requires a minimum wage, 8 h days, and overtime pay, and prohibits child labor. Additionally, many state worker compensation laws systematically exclude agricultural workers. OSHA has promulgated few standards specific to protecting workers in agriculture. Moreover, Congress specifically prohibits OSHA from using federal funds for enforcement activities on farms employing 10 or fewer workers unless they provide temporary worker housing.¹¹⁻¹³

While there is much political debate about the fiscal burden of health and safety regulations, data show that health and safety regulations have an important impact on workers' well-being. Washington State benefits from a state OSHA plan which fully covers all farms with at least one hired worker (requiring full reporting, allowing inspections etc.).¹⁴ There the overall fatality rate in agriculture is the lowest in 47 states that reported at least one farm death in the past 10 years.¹⁵ In other industries, studies offer evidence that improvements in worker health and safety did not markedly impact production expense and business sustainability.¹⁶ More importantly, research suggests that standards and their potential enforcement have a positive impact on worker health and safety.^{17,18}

Research also indicates that OSHA inspections, specifically, have an important impact on injury reduction. Several studies have examined injury data from the annual Survey of Occupational Injuries and Illnesses conducted by the Bureau of Labor Statistics or state level workers' compensation which show that inspections with penalties resulted in reduced injuries. Various factors, including the size of the company, the event triggering the inspection (eg, programmed, complaint, accident, follow-up etc.), and unionization, influenced the

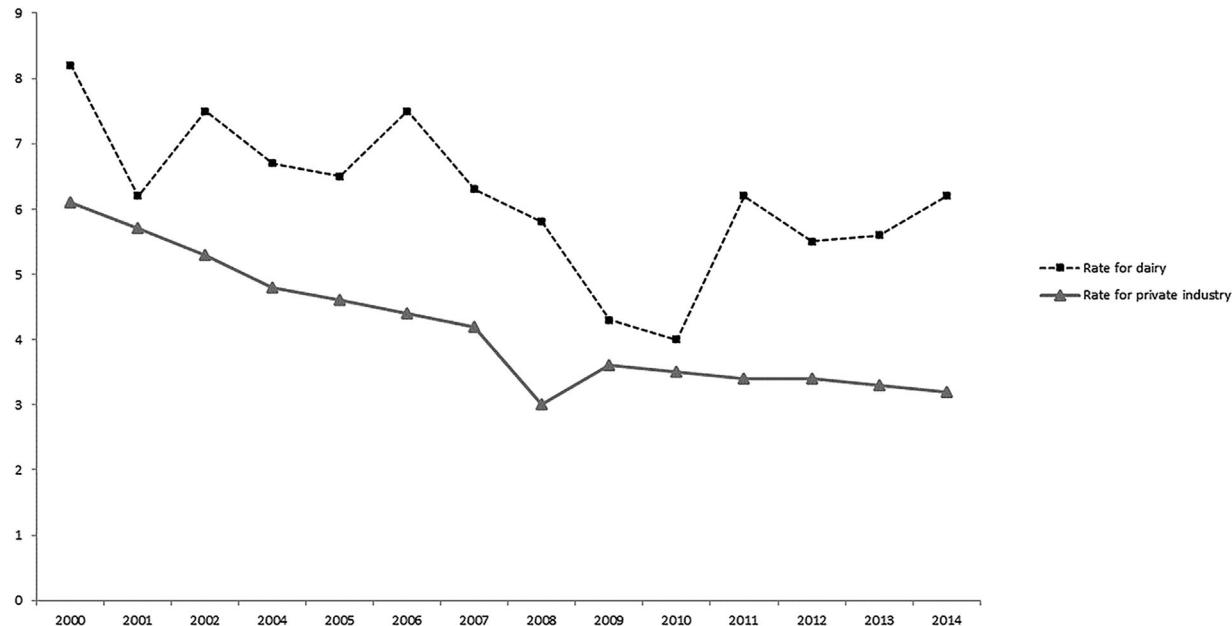


FIGURE 1 Rate¹ of Non-Fatal Injuries for Dairy Cattle and Milk Production² Compared to Private Industry, 2000-2014*. *Incidence rates represent the number of injuries per 100 full-time workers and were calculated as: (N/EH X 200 000 where, N = number of injuries and illnesses, and EH = total hours worked by all employees during the calendar year). 2003 data were not available for inclusion. (1) Number of injuries divided by the total hours worked by all employees during the calendar year. (2) Excludes farms with fewer than 11 employees. Source: U.S. Bureau of Labor Statistics, U.S. Department of Labor, June 8, 2016

TABLE 1 Fatal occupational injuries for dairy farms^a in the US, WI, and NY 2000-2014^b

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009 ^c	2010	2011	2012	2013	2014
US	43	57	49	56	36	42	46	47	43	37	42	39	36	37	49
WI	10 23% ^d	14 25%	9 18%	18 32%	10 28%	10 24%	8 17%	12 23%	10 23%	9 24%	13 31%	10 26%	10 28%	8 22%	8 16%
NY	8 19%	4 7%	9 18%	8 14%	8 22%	4 10%	12 26%	4 9%	4 9%	--	12 29%	8 21%	4 11%	7 19%	9 18%

Source: U.S. Department of Labor, Bureau of Labor Statistics, in cooperation with State, New York City, District of Columbia, and Federal agencies, *Census of Fatal Occupational Injuries*, June 8, 2016.

^aExcludes farms with fewer than 11 employees.

^bIndustry data from 2003 to 2008 are classified using the 2002 North American Industry Classification System (NAICS); Industry data after 2008 are classified using the 2007 NAICS.

^cDashes indicate no data reported.
^dPercentages below the number indicate the percentage of the total dairy fatalities nationally.

extent of the impact, with one study showing only a brief period of limited impact.¹⁹⁻²²

1.1 | OSHA local emphasis programs

In the past decade, two OSHA offices, one in Wisconsin and one in New York, each developed Local Emphasis Programs (LEPs) to address high injury rates in the dairy industry. LEPs are enforcement strategies, developed by OSHA regional offices, intended to address specific hazards, or industries that pose a heightened risk to employees in a specific jurisdiction. LEPs may be implemented by an OSHA regional or area office(s).²³ When an LEP is announced, outreach to the affected industries is the first step. Information regarding the purpose, timing and objectives of the LEP are shared with targeted industry leaders and business owners to increase their awareness of the LEP. Industry groups and labor organizations are also invited to ask questions or request clarification of LEP expectations.

1.2 | The OSHA dairy LEP implementation process

Justification for the Wisconsin and New York LEPs emphasized the dramatic changes in the milk production industry over the past few decades and disproportionately high fatalities. While the number of dairy farms has decreased, the productivity of these farms has increased the need for hired labor. The LEPs also cited the high rates of work-related fatalities and injuries due to the lack of dairy worker experience and the growing influx of hired workers of Hispanic origin.

Notification of the OSHA Dairy LEP was initially publicly released in August 2010 for Wisconsin farms and in September 2013 for New York farms. Both LEPs targeted dairy farms with 11 or more part-time or full-time workers, who were not related to the farm owner. The OSHA offices proposed random, unannounced inspections of dairy farms to identify hazards related to 12 pre-defined hazard priorities referred to as "The Dairy Dozen." These unannounced inspections were a dramatic departure from prior inspections, which largely involved investigation prompted by occupational fatalities.

2 | METHODS

The data presented herein were extracted directly from several source documents: OSHA documents describing the implementation of the Wisconsin and New York LEPs, Wisconsin and New York OSHA citation records, consultation reports performed by the State of Wisconsin On-Site Consultation Program (WisCon, run by the University of Wisconsin), and the New York State Department of Labor, Division of Safety and Health, On-site Consultation Program. The latter on-site OSHA consultation programs are available in all states and are supported by OSHA, often through non-OSHA state institutions.²⁴ Information was also derived from reports produced by the National Farm Medicine Center's (NFMC) Agricultural Safety Consulting (ASC) program and the New York Center for Agricultural Medicine (NYCAMH). These programs were developed as free

services by the NFMC in Wisconsin and NYCAMH in New York in response to requests from dairy industry leaders to assist farms in preparing for the impending LEPs. These onsite farm safety consultations were provided prior to LEP inspections in New York and throughout the duration of the LEP in Wisconsin. Finally, data are presented from telephone questionnaire surveys of dairy farmers conducted by both the NFMC and the NYCAMH in their respective states. The questionnaires used were not developed collaboratively and are not directly comparable, but they did contain several similar (though not identical) questions.

2.1 | Ethics review and approval

The NYCAMH LEP consultation data collection activities were reviewed and approved by Mary Imogene Bassett Hospital Institutional Review Board (IRB). The research activities of the NFMC ASC program were reviewed and approved by the Marshfield Clinic Research Foundation IRB. Derivation of data from public sources such as anonymized WisCon inspection reports and the New York OSHA safety consultation program did not require human subjects review.

3 | RESULTS

3.1 | State responses to the OSHA LEP implementation process

3.1.1 | New York

To provide assistance to the New York dairy industry in anticipation of the OSHA inspection process, several New York farm business organizations and service agencies organized to form an OSHA LEP work group. These agencies included the NYCAMH, New York Farm Bureau, the Northeast Dairy Producers Association (NEDPA), Cornell Pro Dairy, Cooperative Extension, and the New York State Department of Labor (NYSDOL) OCP. OSHA was not included as some dairy farmers voiced their concerns regarding OSHA involvement for they feared open conversation might trigger unannounced inspections and citations (Tonya VanSlyke-NEDPA, Karl Czymbek-Cornell Dairy Program, February 12, 2014. Personal Communication). This workgroup met on a regular basis to develop "dairy dozen" outreach and educational materials and protocols, that could be used by farms to prepare for OSHA inspections. The difficulty expressed by farms was not the lack of interest in providing a safe work environment, but rather the lack of expertise in addressing safety and health issues (James Carrabba, Anna Meyerhoff, NYCAMH Trainers, September 2013, Personal Communication).

Developing written programs, training employees, identifying confined spaces, and properly guarding machinery were all identified priorities for the LEP work group, although all dairy dozen hazards were assessed during site visits. The most significant benefit of the work group was that it brought together agencies and organizations that were trusted by New York dairy farm owners. The work group's objective was to collaboratively identify workplace hazards and offer

suggestions for how they could be corrected to ensure OSHA compliance. A variety of on-farm services were offered to farms, mostly through NYCAMH's staff of safety trainers. Services included the provision of educational materials on hazards, templates for required written programs, sample trainings, and a complete on-site inspection with a review to ensure complete compliance with OSHA requirements (a citation free inspection). On-site, farm-specific training programs were also offered for dairy employees. Organizations were also able to collectively discuss options for correcting hazards, where no previously agreed upon engineering or administrative controls had been established.

The work group was also able to promote the availability of these materials and on-farm OSHA LEP preparation services using direct mailings and articles in farm publications, through websites and at farm outreach events. Guidance documents, protocols, and sample written program templates were also made available online by NYCAMH/NYSDOL, permitting dairy farms to download documents quickly and easily. These NYCAMH/NYSDOL activities provided dairy farms with information and assistance 9 months prior to the initiation of the random inspection process.

Site visits that were conducted by the New York OSHA LEP work group to assist farms with the OSHA random inspections also identified a number of additional hazards and deficiencies that were not part of the initial "dairy dozen." These included tripping hazards, slippery walking-working surfaces, missing or inadequate fire extinguishers, unsecured compressed gas canisters, incomplete OSHA recordkeeping, unsafe ladders, improper electrical cords, and unguarded bench grinders. During these OSHA LEP preparatory site visits, safety and health professionals not only identified hazards but also recommended corrective actions.

3.1.2 | Wisconsin

In Wisconsin, few dairy industry groups and safety health professionals were immediately prepared to assist farms with OSHA LEP inspections. Compared to the visible concern expressed by the New York dairy community, farmers concern regarding the OSHA LEP in Wisconsin was relatively muted. The most visible response from Wisconsin producers related to requests for assistance to ensure compliance with LEP safety expectations. Requests to the NFMC led to two efforts. The first involved the ASC program, a private NFMC service that conducted safety audits for farms to identify hazards, potential areas of regulatory violations, and recommendations for compliance with OSHA. Some assessments covered the entire farm and required a full day to complete. The other activity involved the development of *Seguridad en las Lecherías* (Safety on Dairy Farms), a health, and safety intervention a project to provide culturally appropriate education to Spanish-speaking immigrant workers. This project was part of the Upper Midwest Agricultural Safety and Health Center and carried out by NFMC in partnership with Migrant Clinicians Network to develop and test the intervention which incorporated voluntary safety audits (without citation), a comprehensive train-the-trainer curriculum and the community health worker model. Producers, immigrant and non-immigrant dairy workers, extension

agents, health and safety professionals, researchers, and migrant health experts provided substantial input on the products developed. As part of the OSHA Susan Harwood Training Grant Program, OSHA reviewed and approved the health and safety curriculum. Wisconsin-based dairy industry groups such as the Professional Dairy Producers of Wisconsin and Wisconsin Dairy Farm Business Association helped to promote these programs. Initial focus groups with workers, as well as results of the *Seguridad* program, indicated workers desired safety and health training and had benefited from it.²⁵⁻²⁷ ASC safety audits were integrated into the *Seguridad* program, which was supported with federal and private funds. All participating farms employed 11 or more workers, therefore, meeting the threshold of hired employees that are required for inspection under the OSHA, and thus by the LEP program.²⁸

3.2 | Findings from OSHA inspections and consultation visits

3.2.1 | New York state OSHA inspection compliance summary

Data from the New York Dairy OSHA LEP were obtained for inspections conducted after July 30, 2014 and closed by OSHA by December 20, 2015. In the 18-month LEP period, 19 inspections were conducted on 17 farms. Two of the farms that were inspected had two separate inspections conducted. These inspections were performed by the Syracuse (8), Albany (6), and Buffalo (5) OSHA Area offices. Compliance inspections were performed by OSHA and identified hazards that included a notice of violation and associated penalty. Of the 19 inspections, there were three where no notices of violations were issued. Table 2 offers a summary of the hazards and regulatory violations identified through OSHA inspections.

3.2.2 | New York state on-site consultation summary

Data from the New York On-Site Consultation under the NYSDOL program were obtained for consultations conducted after March 1, 2014 and closed by NYDOL by March 30, 2016. While dairies

TABLE 2 OSHA dairy LEP emphasis topics: The OSHA "dairy dozen"

1. Manure storage facilities and collection structure safety
2. Animal handling worker safety
3. Electrical hazards
4. Skid-steer loader operations
5. Tractor Safety, roll-over protection and seatbelts
6. Power take-offs (PTO) guarding
7. Power transmission and functional components guarding (pulleys, grinding wheels etc)
8. Lock-out Tag-out
9. Hazard communication
10. Confined space entry control
11. Horizontal bunker silos
12. Noise exposure

participating in the NYSDOL consultations were required to correct serious hazards, there was no associated penalty with the identification of the hazard, unless the dairy failed to correct serious hazards in an identified time period, in which case a referral to OSHA would occur. In all, there were 33 consultations conducted at 26 separate dairies. For these consultations, there were 80 issues potentially citable under the general duty clause and these fell into 13 different categories. Table 2 offers a summary of the hazards and regulatory violations identified through the on-site consultation program.

3.2.3 | Wisconsin state OSHA inspection compliance summary

Data from the OSHA Wisconsin Dairy Initiative were obtained for inspections after October 1, 2011 and closed by OSHA by March 17, 2016. There were 44 total inspections performed at 43 dairies. These inspections were performed by the Madison (16), Appleton (17), Eau Claire (8), and Milwaukee (3) OSHA Area Offices. Table 1 offers a summary of the hazards and regulatory violations identified through OSHA inspections.

3.2.4 | Wisconsin state on-site consultation summary

Data from WisCon under the Wisconsin State Laboratory of Hygiene at the University of Wisconsin-Madison were obtained for consultations after January 1, 2011 and closed by WisCon by July 13, 2016. There were four consultations conducted at three dairies. Two of the consultation reports lacked specific details, that is, memos indicated that the reports had not been written. For the two consultations where site visit data were provided, there were 36 serious hazards and one regulatory hazard identified.

3.2.5 | Wisconsin state ASC audit summary

Data from the ASC program were obtained for voluntary audits conducted between March 7, 2012 and February 26, 2016. In all, there were 52 audits conducted at 48 dairies. Four dairies requested repeat inspections. There were 1145 hazards and regulatory violations identified with an average of 22 hazards per farm. Table 3 summarizes hazards and regulatory issues identified by the ASC Program in Wisconsin.

3.3 | Farmer responses to New York and Wisconsin OSHA LEP activities

3.3.1 | New York farmer responses

Following the initial round of New York OSHA LEP inspections, researchers conducted phone surveys with both inspected and uninspected farms to document the changes dairy farms undertook prior to the LEP inspections and their general assessment of the LEP activities. A detailed description of methods and results for this study are reported elsewhere.²⁹ Questions were both open-ended,

TABLE 3 Dirty dozen hazards identified for OSHA enforcement, on-site consultation programs and a private on-site auditing company by state

Enforcement	Consultation		Private on-site auditing ^a	
Wisconsin	New York	Wisconsin	New York	Wisconsin
Manure storage facilities and collection structure safety				
3 ^b	-	-	-	56
Animal handling worker safety				
-	-	-	-	39
Electrical hazards				
1 ^b	9 ^b	7	41 ^b	181
Skid steer loader operations				
-	-	-	1 ^b	35
Tractor safety, roll- over protection				
2 ^b	-	1 ^b	-	31
Power take-off guarding				
14 ^b	6 ^b	-	29 ^b	27
Power transmission guarding (pulleys, grinding wheels etc)				
			3 ^b	52
Lock out/tag out				
-	-	1 ^b	-	15
Hazard communication				
45	9	6	15	151
Confined space issues				
2 ^b	3 ^b	2 ^c	13 ^b	82
Horizontal bunker silos				
-	-	-	-	18
Machine guarding				
-	3 ^b	5 ^c	2 ^b	31
Noise				
-	-	-	-	8

^aNot part of OSHA and no orders to comply issued.

^bGeneral duty hazard are hazards that have no specific OSHA standard but are recognized by the employer, likely to cause death or serious injury, known by the employer and have a feasible method of correction.

^cCited under the 1910 standards for General Industry rather than the OSHA Agriculture Standard CRF 1928.

true-false, and multiple choice. However, to briefly summarize farmers' feedback on OSHA documentation and LEP preparation, farmers spent less than an hour to almost 11 h preparing and updating a variety of required OSHA documentation (eg, written safety plans, Safety Data Sheets (SDS), OSHA 300 logs, etc.). Investments in facility and safety upgrades were reported as ranging from a median of less than \$4000 (uninspected farms) to over \$10 000 (inspected farms). Over half of farmers interviewed indicated that the inspection process was confusing, with little clarification provided by OSHA on appropriate corrections for hazards, such as bunker silos and manure storage. More than half of the farms surveyed reported changes in worker behaviors following preparatory worker trainings. Almost 100% of farmers interviewed agreed they had experienced benefits as a result of the LEP, such as an increased awareness of hazards and improvements in the safety of their dairy operations. Opinions varied regarding the

question of whether OSHA should be allowed to conduct worksite inspections on dairy farms.

3.3.2 | Wisconsin farmer responses

Awareness of the LEP appeared to influence whether safety changes were made by a farm. Based on a survey of 51 farms that participated in the *Seguridad* project, 23 farms reported having been aware of the LEP, of which more than half (52%) reported making changes. Most of the producers who made changes (92%) admitted that their actions were motivated in part by the OSHA LEP. A minority (30%) of those aware of the LEP reported having difficulties complying with OSHA regulations although this was not associated with making changes. Corrections to signage, personal protective equipment (PPE), manure management, tractors, and skid steers were the most common

improvements. Further, all farms that made changes and even some of those that did not, had agreed that preparing for a potential OSHA inspection benefited their farm by raising safety awareness and highlighting their concern for employees. Opinions varied regarding the question of whether OSHA should be allowed to inspect farms. There were no relationships between believing that OSHA inspections should be allowed and LEP awareness or making safety changes. A majority (61%) reported changes in worker behaviors following the worker trainings. The *Seguridad* program trained 836 immigrant workers on 67 farms and implemented a community health worker program on half of those farms.

4 | DISCUSSION

Both the inspections conducted by OSHA as well as the OSHA-affiliated and private consultation programs highlight the presence and variety of hazards on dairy farms in both Wisconsin and New York. Given the fatality rate in dairy in both regions, OSHA's involvement is important. Survey results from Wisconsin show that the presence of a LEP motivated some dairy producers on farms to take action to comply with OSHA and make their farms safer. In New York, substantially more farms formally participated in the OSHA-affiliated consultation program than in Wisconsin via WisCon. This was attributed to the New York dairy farmers' knowledge of the Wisconsin OSHA regulatory work. The farms in New York were extremely concerned about penalties and wanted to do what they could to be in compliance prior to the New York OSHA LEP inspections. The ASC program, privately run by the National Farm Medicine Center in Wisconsin, reached more farms than the OSHA-affiliated consultation programs in Wisconsin and New York combined. We believe that many producers were interested in educating their workers and making their farms safer. While some dairy producers and dairy industry groups in New York appeared frustrated by the New York LEP, the New York LEP potentially served as a motivator for producers to engage in the OSHA consultation program and for more dairies to take advantage of non-profit organization services, such as those offered by NYCAMH. More importantly, farmers interviewed in New York and Wisconsin stated they experienced benefits as a result of the LEP. Because the OSHA LEP focused on farms employing more than 11 employees, it is not clear if smaller farms would have a similar experience. Moreover, additional research is needed to examine the longer-term impact of the LEPs. Recently, a Department of Labor report questioned the long-term impact of special emphasis programs, citing limitations in the measures OSHA uses to determine success.³⁰

5 | LIMITATIONS

The procedures and level of detail of consultative inspections between governmental and non-governmental agencies varied and so, the data are not directly comparable. Additionally, the results do not necessarily indicate more hazardous workplace environments in one state, as

evidenced by the similar number of violations cited by OSHA in New York and Wisconsin. The LEP outcome data presented largely highlights the removal of hazards as opposed to the actual impact on work-related fatality and injury rates. However, hazard conditions can serve as important indicators when assessing the impact of regulatory interventions, especially when dairy fatality rates are relatively high nationally, but relatively rare over short periods of time in specific states.

The data presented here from both states represents a minority of dairy farms, only those employing 11 or more workers. The percentage of dairy farms employing 11 or more workers is 8.2% (1,549/18,931) in Wisconsin and 13.8% (1429/10,345) in New York respectively.³¹ It is not clear how these regulatory engagements could or would impact smaller or more economically marginal farms or how these improvements will change over time.

6 | CONCLUSION

Results from observations made relative to the implementation of LEPs in New York and Wisconsin, highlight the value of conducting LEPs and demonstrate that health and safety regulations have the potential to impact hazard exposures on farms. As these results demonstrate, LEPs raise business owners' awareness of inherent hazards and methods to correct them. The New York and Wisconsin OSHA LEPs also underscore the value of using non-regulatory site visits to identify and assist employers to reduce and eliminate hazards. While the LEPs in Wisconsin and New York mobilized different preparation strategies, the outcome of raising awareness of hazards in the industry and acceptable methods to correct them was accomplished in both states. The results of the assembled data suggest that an LEP helps to identify high-hazard industries and educate employers on how to correct these hazards, even before the OSHA inspection activity begins.

AUTHORS' CONTRIBUTIONS

AL and MK were responsible for the conception of this paper. All authors contributed to the design and work of the paper. It was truly a partnership and AL, JS, EF, and MK met, reviewed, and discussed content for over a year. AL and MK worked directly with IR; EF was responsible for gathering and analyzing the OSHA data. IR was responsible for gathering and analyzing the data from the Agricultural Safety Consulting Program and the *Seguridad* Project. AL and MK worked with IR to frame the analysis. JS contributed the data from the NY Center of Agricultural Medicine and Health; All authors contributed to the drafting this paper. JS, EF, and AL were most involved with the critical revisions of the paper; AL was responsible for final approval of the version to be published; All authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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ETHICS APPROVAL AND INFORMED CONSENT

Work was performed at multiple sites including the Mary Imogene Bassett Hospital and Marshfield Clinic Research Foundation. The Mary Imogene Bassett Hospital Institutional Review Board (IRB) conducted an expedited review of NYCAMH LEP consultation data collection activities and approved the study on 12/9/14. A waiver of written informed consent was permitted; however, participants were asked to provide verbal consent prior to interviews. The Marshfield Clinic Research Foundation IRB approved all research activities of the NFMC ASC program and Seguridad project in WI. Verbal consent was obtained from farmers prior to consultations via the ASC program while written consent was obtained from farmers prior to interviews via the Seguridad project.

DISCLOSURE (AUTHORS)

The authors declare no conflicts of interest.

DISCLOSURE BY AJIM EDITOR OF RECORD

Steven B. Markowitz declares that he has no competing or conflicts of interest in the review and publication decision regarding this article.

DISCLAIMER

None.

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