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OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION
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SECRETARY OF LABOR, Complainant, v. PEPPERIDGE FARM, INC. , Respondent.	OSHRC Docket No. 89-0265

DECISION

Before: WEISBERG, Chairman; MONTOYA and GUTTMAN, Commissioners

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BY THE COMMISSION:

INTRODUCTION

This case concerns Pepperidge Farm Inc.'s Downingtown, Pennsylvania plant, where it produced a variety of cookies and other baked goods.[1] The Secretary of Labor issued citations for numerous alleged "egregious willful" violations of the Occupational Safety and Health Act ("the Act"), 29 U.S.C.§§ 651-678. The basic issues are whether Commission Judge David G. Oringer erred in:

> (1) finding "willfulness" regarding 176 recordkeeping violations under 29 C.F.R. § 1904.2(a), and assessing instance-by-instance penalties totaling $289,603.00 (Citation 1, Item 1);

[1]The Downingtown plant has closed. Pepperidge's corporate headquarters is in Norwalk, Connecticut. Pepperidge is a wholly-owned subsidiary of Campbell Soup Co., whose principal office also is in Connecticut.

> (2) finding recognized hazards and willfulness regarding 21 alleged lifting violations under section 5(a)(1)[2] of the Act, 29 U.S.C. § 654(a)(1), and assessing instance-by-instance penalties totaling $105,000 (Citation 1, Item 3); and
>
> (3) vacating 175 alleged willful repetitive motion violations under section 5(a)(1) of the Act and proposed instance-by-instance penalties totaling $875,000, on the ground that the Secretary failed to establish a feasible means of abating the cited conditions (Citation 1, Item 2).[3]

This case is among the most lengthy and complex to come before the Commission. The Labor Department's Occupational Safety and Health Administration ("OSHA") began its inspection of the Downingtown plant on June 23, 1988, and it continued in September and October. OSHA issued the citations on December 13, 1988. There were 62 days of hearing before Judge Oringer between June 25, 1990, and October 22, 1991. The hearing generated more than 11,000 pages of transcript and over 400 exhibits, including approximately 60 scientific studies and articles. Judge Oringer's decision, which issued on March 23, 1993, was 244 pages. Following a remand to Judge Frye for resolution of the sanctions issue, the Commission issued directions for review in September 1993. The Commission held oral argument in this case on September 20, 1996.[4]

For the reasons explained below, we affirm the judge's disposition of the recordkeeping items cited under section 5(a)(2).

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[2]Section 5(a)(1) provides:

> Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.

[3]Pepperidge "no longer wishes to pursue" the other issue directed for review -- whether Judge Frye erred in denying its motion for sanctions, in his ruling of August 13, 1993.

[4]In addition to the parties, participants included *amici curiæ* the American Federation of Labor and Congress of Industrial Organizations ("AFL-CIO"), the Chamber of Commerce of the United States, and United Parcel Service.

In this case,[5] the Commission considers for the first time whether the Secretary may apply section 5(a)(1), the Act's general duty clause, to issues of "ergonomics." That term has been defined as the "science concerned with how to fit a job to a worker's anatomical, physiological, and psychological characteristics in a way that will enhance human efficiency and well-being."[6] The lifting items here involve employees lifting 100-pound bags of sugar, 68-pound blocks of butter, roll stock weighing up to 165 pounds, and cookie tins weighing up to 38 pounds. The repetitive motion items involve employees performing in quick succession assembly line tasks, such as dropping paper cups from a stack with one hand and filling them with baked cookies with the other hand.

We find that the Secretary may utilize section 5(a)(1) to address lifting and repetitive motion hazards. In regard to the lifting tasks, Pepperidge did not seek review of the judge's finding that a hazard exists. Pepperidge did challenge his finding that it had recognized the hazard. We find that Pepperidge recognized the existence of numerous lifting hazards at the Downingtown plant, based on the memoranda and testimony of its corporate ergonomist, Ms. Jane Teed-Sparling, its own medical records of lifting injuries to employees, and memoranda from its workers' compensation carrier, Liberty Mutual Insurance Company. We reject the arguments that we should not consider that evidence in deciding the question.

The other issues on review regarding lifting are whether the violations were willful, and what penalties are appropriate. We affirm the judge's finding that the violations were willful. Pepperidge was initially warned of injuries from lifting hazards four years before the inspection, and given recommendations on abatement actions to be taken. Despite continued warnings, including identification of alternative solutions, Pepperidge's employees continued to lift weights deemed excessive until after the inspection.

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[5]Pepperidge Farm has asked us to review the record *de novo* and we have reviewed the entire record in this case. In doing so we have also considered the submission of the *amici curiæ*.

[6]Taber's *Cyclopedic Medical Dictionary* 669 (17th ed. 1993).

As to penalties for the lifting violations, the Chairman and Commissioner Guttman have divergent views, but agree to assess a total penalty of $20,000 in this case. For the reasons discussed in their separate opinions at the end of this decision, Chairman Weisberg would uphold the judge's finding of 21 willful violations based on the 21 employees exposed to the recognized hazards, while Commissioner Guttman would find four willful violations based on the number of different lifting tasks which were cited.

With regard to the alleged repetitive motion injuries, we find that the evidence shows that a substantial number of the alleged injuries, particularly carpal tunnel syndrome, did occur among the workers at Downingtown. This conclusion is supported by the medical records, the testimony of Pepperidge's own medical team regarding the medical records, and the views of outside medical professionals. As to the repetitive motion hazards, we have reviewed the testimony and scientific studies in evidence regarding whether the kinds of repetitive jobs at issue here substantially contribute to the development of carpal tunnel syndrome and other upper extremity musculo-skeletal disorders ("UEMSDs"). We find that such jobs can be a substantial contributing factor in these injuries. This view is supported by the clinical and epidemiological evidence discussed below, and by UEMSD incidence rate comparisons between Pepperidge's biscuit line workers and other populations. It is also supported by Pepperidge's own medical records, which contain reports of clinicians who examined and treated employees and reported a causal connection between the jobs and the development of their UEMSDs.

We find multiple bases for concluding that Pepperidge recognized the hazards at issue. These include memoranda by Pepperidge's corporate ergonomist and the medical records of injured employees, as well as testimony by both Pepperidge's medical director and its chief nurse at the plant. We also find that the hazards were causing serious physical harm up to and including disabling conditions requiring surgical correction and even termination of employment.

Finally, we find that abatement of the hazard here can be required under section 5(a)(1) but that the Secretary has failed to meet her burden of showing that further abatement action was required in light of what had already been undertaken. We conclude that the appropriate response to the hazard at Downingtown was a process that included actions selected from a menu of alternatives. The question of the appropriateness of the abatement here turns on the extent to which Pepperidge implemented the recommendations provided by its corporate ergonomist and the extent to which specific further actions urged by the Secretary were required to be undertaken. We conclude that the Secretary has not shown that the additional steps proposed by the Secretary and not taken by Pepperidge were feasible and that their efficacy in reducing the hazard was so compelling that the failure to have implemented them by the time of the inspection rendered Pepperidge's process inadequate.

I. RECORDKEEPING

Introduction

An employer covered by the Act must record and report occupational injuries and illnesses "for enforcement of the [A]ct, for developing information regarding the causes and prevention of occupational accidents and illnesses, and for maintaining a program of collection, compilation, and analysis of occupational safety and health statistics." 29 C.F.R. § 1904.1. These recordkeeping requirements "are a cornerstone of the Act and play a crucial role in providing the information necessary to make workplaces safer and healthier." *General Motors Corp., Inland Div.*, 8 BNA OSHC 2036, 2041, 1980 CCH OSHD ¶ 24,743, p. 30,470 (No. 76-5033, 1980).

The cited regulation, 29 C.F.R. § 1904.2(a),[7] requires employers to "enter each recordable injury and illness" on the OSHA No. 200 form ("OSHA 200") or an equivalent. A recordable occupational injury is defined in section 1904.12(c) as any occupational injury or illness which results in a fatality, lost workdays, transfer to another job, termination of employment, medical treatment (other than first aid), loss of consciousness, restriction of work, or restriction of motion. At the hearing, the Secretary alleged that Pepperidge had committed 179 separate "egregious" willful violations of section 1904.2(a) by either improperly recording or failing to record occupational injuries and illnesses on its equivalent of the OSHA 200 between January 1986 and September 14, 1988, when OSHA began its detailed inspection of the records. The Secretary proposed a penalty of $2000 for each instance. The judge affirmed 176 of those items as willful violations, vacated three of them, and assessed a total penalty of $289,603. At issue on review is whether the judge erred in finding that the violations were willful and whether the total penalty assessed by the judge was appropriate. Pepperidge does not dispute the existence of the violations on review.

[7]That section provides:

> Each employer shall . . . (1) maintain in each establishment a log and summary of all recordable occupational injuries and illnesses for that establishment; and (2) enter each recordable injury and illness on the log and summary as early as practicable but no later than 6 working days after receiving information that a recordable injury or illness has occurred. For this purpose form OSHA No. 200 or an equivalent which is as readable and comprehensible to a person not familiar with it shall be used. The log and summary shall be completed in the detail provided in the form and instructions on form OSHA No. 200.

Background

Between January 1986 and September 14, 1988, Pepperidge's Downingtown plant entered a total of 435 injuries on its OSHA 200 form.[8] The judge found that during this time Pepperidge failed to properly record 74 injuries or illnesses and totally failed to record 102 injuries or illnesses. The 102 unrecorded injuries and illnesses cited by OSHA represent approximately 19 percent of the actual total of 537 injuries and illnesses that occurred during this time and the 74 improperly recorded injuries and illnesses represent approximately 14 percent. Included in these 176 recording errors are 87 cases where Pepperidge failed to correctly identify lost workdays, including restricted workdays, or approximately 32 percent of the actual total of 275.[9]

Janice Taplar, a personnel assistant, was responsible for OSHA recordkeeping at the Downingtown plant during this time. Taplar's training consisted of a "very basic review of an OSHA [200] log and the instructions on the back of it." She was not given any other written materials and there is no indication that she had any other OSHA recordkeeping experience. The judge found, and Pepperidge does not dispute, that Taplar had some basic misconceptions about her OSHA recordkeeping duties that would have been corrected by a careful reading of the OSHA 200 form and accompanying instructions. For example, she was

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[8]Pepperidge entered 128 injuries for 1986, 172 for 1987, and 135 in 1988 up to September 14. Pepperidge did not include in its 1986 summary all the cases it recorded on its 1986 log. Its stated total for that year was 119, apparently due to failure to count nine lost workday cases (including restricted workdays).

[9]Pepperidge reported a total of 188 lost workday cases, including restricted workday cases. It reported 61 for 1986, 80 for 1987, and 47 for 1988 up to September 14. During that period Pepperidge totally failed to record 36 cases that involved lost workdays, including restricted workdays, and erroneously recorded 51 cases as having no lost workdays, for a total of 87 under reported lost workdays cases. Approximately 13 of those cases, mostly involving repetitive motion illness, involved more than 20 lost days. Approximately six cases involved more than 30 restricted workdays. Another four involved over 20 such days, another eight involved more than 10 such days, and another 12 involved more than three such days. Many of those cases involved contusions, sprains, or strains, and others involved repetitive motion.

not aware of the duty to update the log if lost workdays or restricted work activity occurred or continued after an initial entry was made or that all recordable injuries and illnesses had to be recorded within six days of learning of their occurrence.[10] Taplar testified that prior to the inspection, she had not used the illness side of the log at all. Taplar also incorrectly

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[10]The Instructions for the OSHA No. 200 Form, found on the back of the form, state:

> **I. Log and Summary of Occupational Injuries and Illnesses**
>
> . . .
>
> Enter each recordable case on the log within six (6) workdays after learning of its occurrence.
>
> . . .
>
> **II. Changes in Extent of or Outcome of Injury or Illness**
>
> If, during the 5-year period the log must be retained, there is a change which affects entries in columns 1, 2, 6, 8, 9, or 13 [including whether it is a lost workday case], the first entry should be lined out and a new entry made. For example, if an injured employee at first required only medical treatment but later lost workdays away from work, the check in column 6 should be lined out, and checks entered in columns 2 and 3 and the number of lost workdays entered in column 4.
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> . . .
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> **VI. Definitions**
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> . . .
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> **OCCUPATIONAL ILLNESS** of an employee is any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. . . .
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> . . .
>
> 7f. **Disorders Associated with Repeated Trauma**
>
> Examples: Noise-induced hearing loss, synovitis, tenosynovitis, and bursitis; Raynaud's phenomena; and other conditions due to repeated motion, vibration, or pressure.

believed that a case was not recordable unless it was compensable for workers' compensation purposes. She also was not aware before the inspection that she was required to record repetitive motion injuries as occupational illnesses.

Taplar's other duties may have made it difficult for her to maintain accurate records. She was responsible for a large number of personnel, safety, and other related matters.[11] As a result, she was three months behind in filling out the OSHA 200 form when OSHA inspected in June 1988. Taplar did manage to keep up to date other safety recordkeeping on which the Downingtown plant placed a higher priority. She timely filed a monthly report for use in a safety competition among Pepperidge plants based on lost workdays and she also submitted lost workday information for a National Safety Council competition every month.

R. Scott Maxwell, the plant's Manager of Human Resources and chief safety officer, was Taplar's supervisor. Maxwell trained Taplar in OSHA recordkeeping and had previously been responsible for it himself.[12] Maxwell had no copies of OSHA regulations or other government documents regarding OSHA recordkeeping in his department, except for an unidentified U.S. Department of Labor Bureau of Labor Statistics ("BLS") guideline that he was unaware of until he prepared for his deposition in this case. Pepperidge's own detailed manual entitled "Occupational Injury and Illness Recordkeeping and Reporting," dated 1977, was kept at Pepperidge's corporate headquarters and was never distributed to Pepperidge's

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[11]Her job description shows that her jobs included "recruiting, interviewing, testing and selection of all hourly, weekly salaried applicants," "administration of Workers' Compensation program" and unemployment compensation, operating the employee store, and coordinating "employee activities, company picnics and parties, and Fund Drives." In the safety category alone, she was the plant's "safety coordinator working with employee committees." She was "responsible for setting up and conducting a productive plant wide program, assuring compliance with OSHA regulations and inspections" and making "safety presentations to employees at department meetings." She also conducted "safety training, fire drills [and assisted] in first aid training." (Government Exhibit ("GX") 37). The plant had 1400 to 1500 employees.

[12]Maxwell had received the same type of limited training as Taplar.

plants. Maxwell testified that prior to December 6, 1988, no employee at Pepperidge's Downingtown plant had attended any courses, seminars, lectures, classes, or meetings that focused on OSHA recordkeeping. Taplar never supplied Maxwell with a copy of the OSHA 200 logs or the summary of the logs. Prior to December of 1988 there was no procedure to monitor the accuracy of the OSHA 200 forms once they were completed.

In contrast, Pepperidge's higher management had expressed interest in OSHA recordkeeping during the period in question. On October 22, 1987, Pepperidge's Corporate Manager of Human Resources, Steve Larson, directed a memorandum to Pepperidge's "Principal Human Resources Representatives," asking them to "review the requirements" for OSHA recordkeeping "with those responsible for completing the Log and Summary, OSHA No. 200 and the Supplementary Record, OSHA No. 101." (Government Exhibit ("GX") 11). Attached to Larson's memorandum was the Bureau of Labor Statistics guide titled *A Brief Guide to Recordkeeping Requirements for Occupational Injuries and Illnesses* (OMB No. 1220-0029, June 1986) (Effective April 1986)[13] ("BLS brief guide"). (GX 10). Larson distributed these materials at the direction of Dennis Dougherty, Pepperidge Farm's Vice President of Human Resources at its Norwalk, Connecticut headquarters.

On November 4, 1987, Fred Wahl, Jr., the Corporate Director of Safety for Pepperidge Farm's corporate parent, Campbell Soup Company, directed a memorandum to the "Plant Managers" of Pepperidge Farm and other Campbell Soup affiliates, consisting of an "****IMPORTANT ** MESSAGE ON OSHA RECORDKEEPING**." (GX 7) (emphasis in original). After noting OSHA's "major emphasis on industry's strict adherence to their recordkeeping requirements," the memorandum stated that "[o]ver the last few months they have levied fines of hundreds of thousands and even millions of dollars for improper recording of occupational injuries and illnesses." The memorandum further stated that "**[i]t**

[13]This is not the detailed "*Recordkeeping Guidelines for Occupational Injuries and Illnesses*," also published in 1986 by BLS, which was discussed in *Caterpillar, Inc.*, 15 BNA OSHC 2153, 2157, 1991-93 CCH OSHD ¶ 29,962, p. 40,990 (No. 87-922, 1993).

is imperative that all OSHA recordkeeping requirements be accurate within Campbell Soup Company." (Emphasis in original). It instructed that the BLS Brief Guide, which was attached to the memorandum, "should be followed very closely!" Wahl also instructed plant managers that "[a]fter reviewing your records and insuring that they are in accordance with OSHA requirements, I recommend that you cross check the OSHA logs with your workers' compensation files to [e]nsure that they match (go back 5 years)." He stated that "**[t]his is a critical concern and should be undertaken without delay!**" (Emphasis in original).

On December 4, 1987, Wahl issued a follow-up memorandum to all Human Resource Managers, including Maxwell, with copies to Dougherty and Larson. (GX 9). In it, he reminded the managers of his initial recommendation to review and correct all records, then requested that copies of each plant's OSHA 200 logs for the past five years be sent to him. According to Maxwell, who recalls the request, but not the memorandum, copies of the Downingtown plant's OSHA 200 logs were indeed supplied to Wahl; Wahl, however, testified that he did not review these records nor did he assign anyone in his office to do so.

Between 1976, when Maxwell was first trained at Pepperidge in OSHA recordkeeping, until after the citations were issued in December 1988, Maxwell never received any instructions from his superior to cross check the worker's compensation logs and the OSHA 200 logs. Prior to December 1988, there were no procedures in the Downingtown plant to monitor the accuracy of the OSHA 200 forms once they were completed. Maxwell could not recall receiving either the memoranda from Larson, the November 4 memoranda from Wahl, or a copy of the OSHA recordkeeping guide, and Taplar testified that she had not seen these documents. Maxwell had no discussions with Larson regarding OSHA recordkeeping between the time of Larson's October 1987 memorandum and the start of the OSHA inspection. Neither Maxwell or Taplar knew the whereabouts of any BLS materials until well after the citations were issued.

Maxwell had submitted the OSHA 200 logs for the last five years from Downingtown to Campbell Soup's headquarters. Although the December 4 memorandum notes that "[i]t

has been one month since I sent a notice to all locations outlining the need to review and correct, if needed, your OSHA records," the Downingtown plant did not perform any audit of OSHA recordkeeping practices or of its OSHA 200 logs, nor was any additional recordkeeping training provided to Pepperidge Farm employees, until after the beginning of the overall OSHA inspection in June 1988. Dennis Dougherty, Pepperidge Farm's Vice-President for Human Resources and chief executive officer in the safety area, simply interpreted the December 4 memorandum as a "straightforward informational request . . . to the human resources managers, and I didn't believe it required any action on my part." He also testified that no action was taken by him or by anyone on his staff in response to the November 4 memorandum. Dougherty stated that no response was necessary because Larson had distributed copies of the BLS brief guide to all Pepperidge Farm human resources representatives on October 22, 1987.

Willfulness

A violation is willful if it is committed with intentional, knowing, or voluntary disregard for the requirements of the Act or with plain indifference to employee safety. *E.g., Valdak Corp.*, 17 BNA OSHC 1135, 1136, 1993-95 CCH OSHD ¶ 30,759, p. 42,740 (No. 93-239, 1995), *aff'd*, 73 F.3d 1466 (8th Cir. 1996). The Third Circuit, the jurisdiction in which this case arises, has held that a willful violation is characterized by an "obstinate refusal to comply" with safety and health requirements that "differs little from" the Commission and majority-circuit test. *Universal Auto Radiator Mfg. v. Marshall*, 631 F.2d 20, 23 (3d Cir. 1980) (quoting *Babcock & Wilcox v. OSHRC*, 622 F.2d 1160, 1167-68 (3d Cir. 1980)). "It is differentiated from other types of violations by a 'heightened awareness -- of the illegality of the conduct or conditions -- and by a state of mind -- conscious disregard or plain indifference.'" *Calang Corp.*, 14 BNA OSHC 1789, 1791, 1987-90 CCH OSHD ¶ 29,080, p. 38,870 (No. 85-319, 1990) (quoting *Williams Enterp.*, 13 BNA OSHC 1249, 1256-57, 1986-87 CCH OSHD ¶ 27,893, p. 36,589 (No. 85-355, 1987)).

We conclude that Pepperidge's failures to record here are properly characterized as willful. The evidence establishes that Pepperidge was plainly indifferent to its recordkeeping responsibilities. The record clearly demonstrates that various officials in the management of both Pepperidge's Downingtown facility and Pepperidge's corporate headquarters as well as Pepperidge's parent, Campbell Soup, had a heightened awareness of the requirements of section 1904.2(a). Company officials were aware that OSHA put a major emphasis on industry's strict adherence to OSHA recordkeeping requirements. Nevertheless, Taplar, the employee who actually made the recordkeeping entries, as well as her supervisor, Maxwell, lacked basic training in what injuries and other details to enter on the OSHA 200 form.[14] Tapler and Maxwell did not have access to or were not aware of basic recordkeeping information, particularly the BLS brief guide. Even so, most of the 176 misrecorded or unrecorded conditions reflect a failure to follow the specific instructions found on the back of the OSHA 200 form to enter injuries and illnesses that involve lost workdays, restricted work, or "repeated motion." Pepperidge's recordkeeping failures involving repetitive motion illnesses are particularly troubling here. As the judge found, at least 50 of the violations involve repetitive motion illnesses. As we will discuss in greater detail below, repetitive motion or carpal tunnel disorders, many requiring surgery, affected Pepperidge's Downingtown employees at an extraordinarily high rate. Better recordkeeping might have led to more efficient identification and correction of hazards that may have caused those repetitive motion injuries. *See General Dynamics Corp., Electric Boat Div*., 15 BNA OSHC 2122, 2128 n.13, 1991-93 CCH OSHD ¶ 29,952, p. 40,955 n.13 (No. 87-1195, 1993).

Even after Wahl's urgent warning in November 1987 that the records must be accurate or huge fines might be assessed by OSHA, no one at Pepperidge checked the

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[14]We are not suggesting that Taplar's errors in filling out the OSHA 200 establish that the recordkeeping violations before us are willful. The willfulness of a violation turns on the employer's underlying state of mind when it committed the violation. *Monfort of Colorado, Inc.*, 14 BNA OSHC 2055, 1991-93 CCH OSHD ¶ 29,246 (No. 87-1220, 1991).

accuracy or timeliness of Downingtown's OSHA 200s. No changes were made to Downingtown's recordkeeping methods. Pepperidge was three months behind in entering cases when OSHA inspected in June 1988. At the same time, Pepperidge was keeping current on other safety recordkeeping matters for competitions. An indifferent attitude toward OSHA recordkeeping is well established on this record.[15]

The circumstances are in contrast to *Caterpillar, Inc.*, 15 BNA OSHC 2153, 1991-93 CCH OSHD ¶ 29,962 (No. 87-922, 1993), and a number of other cases in which the Commission found that the Secretary failed to establish willfulness.[16] In *Caterpillar*, the Commission found that the recordkeeping violations resulted from the failure of company officials to provide proper directions to Dr. Neu, the person responsible for Caterpillar's recordkeeping, but held that those officials' omissions and misdirections did not demonstrate intentional disregard or plain indifference. Dr. Neu was, at least initially, supplied with some of the material published by the BLS to assist in filling out the OSHA 200. Over time,

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[15]In our view, Pepperidge's indifference constitutes willfulness under all the relevant tests including that of the Third Circuit. Pepperidge's indifference amounted to a "reckless disregard" of whether its OSHA records were in compliance, and thus was equivalent in effect to an "obstinate refusal to comply" with the Act. This is evidenced by multiple indicia of indifference discussed in the text including the fact that at the same time that the Pepperidge Downingtown plant was derelict and tardy in its OSHA recordkeeping responsibilities, it was up to date on other safety recordkeeping on which it placed a higher priority. The Downingtown plant timely filed a report each month for use in a safety competition among Pepperidge plants based on lost workdays and also submitted lost workday information each month for a National Safety Council competition.

[16]In a number of the cases cited by Pepperidge, the Commission simply found sufficient good faith to negate willfulness. *See J. A. Jones Constr. Co.*, 15 BNA OSHC 2201, 2211-12, 1991-93 CCH OSHD ¶ 29,964, p. 41,028-31 (No. 87-2059, 1993); *Hackney, Inc.*, 15 BNA OSHC 1520, 1991-93 CCH OSHD ¶ 29,618 (No. 88-391, 1992); *Marmon Group, Inc., d/b/a Darling Store Fixtures, Inc.*, 11 BNA OSHC 2090, 2092-93, 1984-85 CCH OSHD ¶ 26,975, p. 34,643 (No. 79-5363, 1984); *Mobil Oil Corp.*, 11 BNA OSHC 1700, 1983-84 CCH OSHD ¶ 26,699 (No. 79-4802, 1983).

Pepperidge also cites a number of Commission decisions finding willfulness that, it claims, involve more aggravated circumstances than those here. However, to the extent this might be so, it does not negate willfulness here.

through the neglect of company officials, Dr. Neu had modified Caterpillar's criteria in determining what was recordable on the OSHA 200 log along the lines of Caterpillar's internal reporting system in an effort to achieve the goal of company-wide consistency in recording. Dr. Neu made an effort to maintain records of employee injuries and illnesses, although his adherence to Caterpillar's guidelines instead of OSHA's recordkeeping requirements led to Caterpillar's recordkeeping violations *Id*. at 2157-58, 2176, 1991-93 CCH OSHD at pp. 40,990-91, 41,010. By contrast, Taplar's recording errors were not the result of misguided attempt to conform recordkeeping to the wrong model. They were due to a lack of commitment to OSHA recordkeeping and a lack of understanding of what should be recorded. Company officials made no attempt to remedy this despite their heightened awareness of OSHA recordkeeping requirements.

The Commission's decision in *Kohler Co.*, 16 BNA OSHC 1769, 1993-95 CCH OSHD ¶ 30,457 (No. 88-237, 1994), is also distinguishable. In *Kohler,* the Commission found that recordkeeping violations were not willful but were caused by the employer's "simple inadvertence." The nurses responsible for recordkeeping had received a two-hour training session on a recordkeeping system that the Commission described as being "excellent" in part. Here, Taplar's training clearly was inadequate. Also, the 277 recordkeeping errors in *Kohler* represented approximately 11 percent of the total of 2,475 injuries and illnesses. By contrast, the 176 recordkeeping errors at issue here represent approximately 33 percent of the total of 537 injuries and illnesses. Finally, unlike this case, Kohler's management was not shown to have had a heightened awareness of the requirements of section 1904.2(a).

Our finding of willfulness here would not be justified if Pepperidge made a good faith effort to comply with the recordkeeping requirements, even if its efforts did not result in full compliance with its recordkeeping responsibilities. The test of good faith in this regard is an objective one--whether the employer's efforts to comply were reasonable under the circumstances. *Tampa Shipyards, Inc*., 15 BNA OSHC 1533, 1541, 1991-93 CCH OSHD

¶ 29,617, p. 40,104 (No. 86-360, 1992) (consolidated). The record shows that Pepperidge had not previously received recordkeeping citations as a result of earlier OSHA inspections. This evidence, however, does not overcome the profound recordkeeping shortcomings here. *See Seibel Modern Mfg. & Welding Corp.,*15 BNA OSHC 1218, 1223-24, 1991-93 CCH OSHD ¶ 29,442, pp. 39,679-81 (No. 88-821, 1991) (employer cannot infer from uneventful prior inspections that there was no hazard). Nor does Commission case law require a prior citation as a prerequisite to a finding of willfulness. *Woolston Construction Co.*, 15 BNA OSHC 1114, 1119, 1991-93 CCH OSHD ¶ 29,394, p. 39,570 (No. 88-1877, 1991), *aff'd without published opinion*, No. 91-1413 (D.C. Cir., May 22, 1992) (1992 WL 117669). The company memoranda from Larson and Wahl is some evidence of good faith, showing that the company was aware of its recordkeeping responsibilities. However, the response to the memoranda by Pepperidge's Downingtown plant is even more probative of its commitment to good recordkeeping. *Cf., Morrison-Knudsen Co./Yonkers Contrac. Co., A Joint Venture*, 16 BNA OSHC 1105, 1127, 1993-95 CCH OSHD ¶ 30,048, p. 41,285 (No. 88-572, 1993) (willful violation found in part where employer apparently ignored its own safety program; safety program is evidence employer was aware of the cited standard and its requirements). As we have found, there was no response to Wahl's repeated requests that OSHA records be reviewed and corrected.[17] Pepperidge contends that the absence of an intent to deceive shows good faith. However, here the misrecording is the result of plain indifference. *See Ensign-Bickford Company v. OSHRC*, 717 F.2d 1419, 1422-23 (D.C. Cir. 1983), *cert. denied*, 466 U.S. 937 (1984).

[17]The Downingtown plant did respond to Wahl's request in his December follow-up memoranda to send him a copy of their completed OSHA 200 forms for the past five years. However, Wahl and his staff did not review the logs for completeness and correctness. He had asked for the logs because he thought that "any good manager who was sending documents of any type to the corporate office would ensure that they were correct prior to sending them." The Downingtown plant failed to do this.

Because Pepperidge did not have reason to believe that its OSHA recordkeeping system actually was adequate after it received Wahl's warnings, its failure to respond to those warnings bespeaks indifference to, and even conscious disregard of, OSHA's recordkeeping requirements. That failure also negates Pepperidge's claim that it made good faith efforts.

Penalty

Under section 17(j) of the Act, an appropriate penalty is determined by considering the size of the employer, the gravity of the violation, the good faith demonstrated by the employer, and the employer's history of previous violations. 29 U.S.C. § 666(j). Commission precedent provides that the Secretary has discretion to cite each failure to record as a separate violation. *E.g., Caterpillar*, 15 BNA OSHC at 2173, 1991-93 CCH OSHD at p. 41,007. The Act gives the Commission, rather than the Secretary, the discretion to assess the penalties it finds appropriate. *E.g., Hern Iron Works, Inc.*, 16 BNA OSHC 1619, 1621-23, 1993-95 CCH OSHD ¶ 30,363, pp. 41,881-83 (No. 88-1962, 1994). "[A]lthough the Secretary may cite separate omissions to record injuries as separate violations, he may not exact a total penalty that is inappropriate in light of the four factors listed in section 17(j) of the Act." *Caterpillar*, 15 BNA OSHC at 2173, 1991-93 CCH OSHD at p. 41,007.

As mentioned above, Judge Oringer assessed separate penalties for the 176 violations for a total penalty of $289,603. He based his penalty assessments on the testimony of H. Berrien Zettler, OSHA's Deputy Director of Compliance Programs,[18] the willful nature of the violations, and the "factors outlined in § 17(j) of the Act." The judge found that the recordkeeping errors could be loosely divided into three groups for penalty purposes. The first group is comprised of complete failures to record occupational injuries or illnesses,

[18]Zettler had testified that the $2000 penalty for each recordkeeping violation was determined on a penalty scale of $1000 to $3000 per violation, a range developed by the Secretary for willful recordkeeping violations just prior to the Pepperidge citation. Zettler testified that the $2000 penalty put Pepperidge in the middle of the scale because Pepperidge was neither one of the worst violators nor one of the least violators.

despite documentation of their recordability. He determined that a penalty range of $1800 to $2000 was appropriate for this group.[19] The $1400 to $1600 penalty range cases involved injuries or illnesses that were recorded on the log, but were erroneously classified as not resulting in lost workdays. The $1000 to $1200 group involved injuries or illnesses in which the actual number of lost workdays or restricted work activity days was under reported. In each of these groups the judge assessed the actual penalty for a violation based on the nature of the recordkeeping error involved, adjusting the penalty based on how extensive the consequences of the errors were. He found that twelve violations did not fit neatly into any of the three groups above because although they were recorded as injuries with lost workdays, the number of lost workdays and restricted workdays recorded was incorrect. He assessed penalties for them ranging from $1300 to $1700. He also found that three other items were so minor that a penalty of $1 was appropriate.

We find that the penalties assessed by the judge were appropriate under the penalty factors set forth in section 17(j) of the Act and under the principles set forth in *Caterpillar*. Pepperidge is a very large employer with approximately 1500 employees at this location alone. It had a minimal history of violations company wide and no prior history of recordkeeping violations at the Downingtown plant. Gravity, generally the principal factor to be considered in penalty assessment, is low because recordkeeping violations bear only tangentially on the normal determinants of gravity: the number of employees exposed, the duration and degree of exposure, and the relative likelihood of an accident. *E.g., Caterpillar*, *Id*. at 2178, 1991-93 CCH OSHD at p. 41,012. We see little basis for giving Pepperidge credit for good faith. The great bulk of its failures to record were clear violations of either

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[19]At the time this case arose, section 17(a) of the Act, 29 U.S.C. § 666(a), provided that either a willful or repeated violation could be assessed a penalty of up to $10,000 whereas the maximum penalty under section 17(b) for a serious violation was $1000. These amounts were subsequently raised to $70,000 and $7000, respectively, in the Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, 3101 (1990).

the OSHA regulations or the instructions on the back of the OSHA 200. Pepperidge's failure to provide proper recordkeeping training, its failure to provide reference materials on recordkeeping to the employees who kept records and its failure to respond to Wahl's request to review and correct its records, further support our finding of Pepperidge's lack of good faith. Moreover, Pepperidge's failures occurred despite its ability to maintain other records accurately as well as its management's acknowledgment of its recordkeeping responsibilities shown by Larson's and Wahl's letters.

We find that the range of penalties in the judge's assessments was an appropriate response to the obviousness of the recordability of injuries or illnesses. We note that the judge's total penalty assessment was approximately ten times what the Commission had assessed for somewhat similar violations in *Caterpillar*, where the Commission found the violations to be non-serious rather than willful. The Act provides that a willful violation is subject to a penalty up to ten times as high as for a serious or non-serious violation. Thus, Judge Oringer's assessment is roughly proportional to the assessment in *Caterpillar,* considering that he found these violations willful. We concur in the judge's assessment of the highest penalties for Pepperidge's failure to record injuries and illnesses that were clearly recordable under the language of the recordkeeping regulations because they resulted in lost workdays or restriction of work. Pepperidge argues that penalties assessed by the judge are inappropriate "because Judge Oringer did not evaluate under the statutory criteria *either* the *total* $289,603 penalty *or* the . . . penalties for *individual* items" (emphasis in original). However, the judge stated that he considered the section 17(j) criteria. In addition, the judge discussed in detail the relevant facts regarding each item. Accordingly, we find that the total penalty assessed by the judge is appropriate in light of the four factors listed in section 17(j) of the Act.

Pepperidge makes a number of arguments attacking the propriety of the Secretary's instance-by-instance policy. It claims that the policy is invalid because the Secretary did not follow the notice and comment procedures of the Administrative Procedure Act ("APA"),

5 U.S.C. § 551 *et seq*., in adopting it, and that even if rulemaking were unnecessary, the policy is still unenforceable because the Secretary did not give advance notification of it in the Federal Register. Pepperidge also points out that section 17(a) of the Act does not include language comparable to that of the Federal Coal Mine Health and Safety Act of 1969, which provides that: "Each occurrence of a violation of a mandatory health or safety standard may constitute a separate offense." 30 U.S.C. § 820(a). Pepperidge also argues that the Secretary's policy contravenes the Act "by effectively adding a new category of violation to the four authorized by section 17." Finally, Pepperidge contends that the express language of 17(j) directing the Commission to consider the "size of the business of the employer" and the "gravity of the violation" when assessing penalties would be extraneous if the number of violations found under section 17(a) would equal the number of employees exposed.

The Commission has considered and rejected most of these arguments in *Caterpillar*. It held that the lack of APA rulemaking did not invalidate the instance-by-instance policy because the Act does not limit the Secretary's discretion to cite separate violations of standards instance-by-instance, and the Secretary need not engage in rulemaking to exercise that discretion. *Id.* at 2171-73, 1991-93 CCH OSHD at pp. 41,004-07. The Commission held that the Secretary was not required to publish the policy in the Federal Register because it is contained in his Field Operations Manual ("FOM"), now the Field Inspection Reference Manual ("FIRM") (OSHA Instruction CPL 2.103 (September 26, 1994)) and in other instructions to OSHA staff such as OSHA Instruction CPL 2.80, *Handling of Cases To Be Proposed for Violation-By-Violation Penalties* (October 1, 1990). There is no requirement that the Secretary publish in the Federal Register the FOM or other instructions to her staff. *DeKalb Forge Co.*, 13 BNA OSHC 1146, 1986-87 CCH OSHD ¶ 27,842 (No. 83-299, 1987).

The Commission also addressed Pepperidge's statutory concerns in *Caterpillar,* holding that the absence of "separate offense" language in section 17(a) of the Act does not prohibit separate penalties and that the Secretary may cite separate, erroneous entries on an

OSHA 200 form as separate violations. 15 BNA OSHC at 2172-73, 1991-93 CCH OSHD at pp. 41,005-07. Finally, the Commission held in *Caterpillar* that the section 17(j) penalty "factors can be applied to citations that involve numerous failures to comply with a standard or to just one failure to comply." 15 BNA OSHC at 2173, 1991-93 CCH OSHD at p. 41,007.[20]

We therefore find that Judge Oringer provided a sufficient basis for the penalties he assessed, that his overall penalty is appropriate and his methodology is reasonable.

II. THE LIFTING TASKS

In items 3(a) through 3(d) and 3(f) of willful citation 1,[21] the Secretary alleged that Pepperidge Farm committed 21 separate violations of section 5(a)(1) of the Act by requiring 21 employees to perform excessive lifts. Judge Oringer affirmed each item and assessed the Secretary's proposed penalty of $5,000 for each item for a total penalty of $105,000. Four types of lifts were involved. Items 3(a) and 3(b) involved lifting rolls of foil, label, and cardboard stock, weighing 165, 120, and 70 pounds respectively.[22] The stock is used to make

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[20]In her dissent, Commissioner Montoya attempts to distinguish the instant case from *Caterpillar* on the ground that it "does not present the aggravated facts of *Caterpillar*." Our colleague writes that in *Caterpillar* "the facts suggested that the company *might have* developed certain recordkeeping guidelines in order to avoid wall-to-wall inspection by OSHA," and that *"Pepperidge Farm* is unlike *Caterpillar* since there is no reason to believe that *Pepperidge Farm* was acting in bad faith." (Emphasis added). Notwithstanding our colleague's attempt to establish a new standard of proof, namely "might have" or "might well have," in fact in *Caterpillar* the Commission did not find that recordkeeping practices were developed to thwart OSHA ("there is no solid, reliable evidence to support this theory").

[21]The judge vacated item 3(e) on the ground that the Secretary failed to prove that the hazard was recognized. The Secretary did not challenge the judge's vacating of this item and it is not on review.

[22]The Secretary cited Pepperidge for four employees exposed to hazardous lifting in item 3(a) and two employees exposed in item 3(b). However, the judge considered items 3(a) and (b) together because he found that they involved the same lifting hazard. Because the Secretary did not challenge this finding we also treat them together.

bags for Pepperidge's products. Employees lifted the rolls from pallets or skids onto a dolly and then rolled it to a bag forming machine.[23] The six employees performing this task lifted the stock up to six times a shift during each of three shifts.[24] Item 3(c) involved employees lifting 100-pound sugar bags "a few times an hour" from a pallet where they were stacked eight high to the edge of a hopper or pulverizer, cutting the bag open, and dumping in its contents. The Secretary cited Pepperidge for exposing three employees to this hazard. Item 3(d) involved the six employees who lifted 68-pound blocks of butter to a height of either 36 or 52 inches and placed them into a mixer. Item 3(f) involved employees lifting metal tins filled with cookies from heights between 13 to 74 inches. The tins weighed between 27 to 38 pounds[25] when filled and 16 pounds when empty. Six employees routinely handled these tins twice in a three minute period, once when full and once when empty.

To establish a violation of section 5(a)(1) of the Act, the Secretary must prove that: (1) a condition or activity in the employer's workplace presented a hazard to employees, (2) the cited employer or the employer's industry recognized the hazard, (3) the hazard was causing or likely to cause death or serious physical harm,[26] and (4) feasible means existed

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[23]One type of bag forming machine is called a "sig" machine, which has a mechanism to lift the paper and foil rolls up into position so that an employee would not have to manually lift the paper and foil rolls onto the machine.

[24]Industrial Hygienist Pamela Mackrides testified that relief workers would take over during these employees' breaks.

[25]The citation states that the tins range in weight from 27 to 38 pounds each. In corporate ergonomist Teed-Sparling's April 8, 1987 memorandum, she states that the filled tins weigh between 24 to 40 pounds each. (GX 39). On the videotape of the lifting tasks in evidence, Mackrides stated that the tins weigh between 20 to 38 pounds when full. (GX 58).

[26]The *amicus curiæ*, United Parcel Service, wants the Commission to examine the issue of whether serious physical harm can result from lifting tasks, an issue not contested by Pepperidge Farm or directed for review. Ordinarily, the Commission does not decide issues that are not directed for review. We find no reason to depart from this policy here. *See Tampa Shipyards, Inc.,* 15 BNA OSHC 1533, 1535 n.4, 1991-93 CCH OSHD ¶ 29,617, p.

(continued...)

to eliminate or materially reduce the hazard. *General Dynamics Land Systems Div., Inc*., 15 BNA OSHC 1275, 1280, 1991-93 CCH OSHD ¶ 29,467, p. 39,752 (No. 83-1293, 1991), *aff'd without published opinion,* 985 F.2d 560 (6th Cir. 1993). The judge found that documents from Pepperidge's corporate ergonomist and its insurance carrier, testimony from the OSHA compliance officer, Pepperidge employees, and the corporate ergonomist, as well as the injuries sustained by employees while performing these lifting tasks demonstrated that the tasks exposed employees to hazards causing serious physical harm and that Pepperidge recognized them. The judge found that feasible methods of abating these hazards were established by memoranda from the corporate ergonomist and insurance carrier, and by the various methods that Pepperidge ultimately employed to abate these lifting hazards. Neither party sought our review of the judge's finding that a hazard existed.[27] At issue here are whether the lifting hazards were recognized, whether the violations, if any, were willful, and whether the penalties assessed by the judge were appropriate. For the reasons that follow, we affirm the violations as willful.

Recognition of the Hazard

Under section 5(a)(1) of the Act, "[a] hazard is deemed 'recognized' when the potential danger of a condition or activity is either actually known to the particular employer or generally known in the industry." *St. Joe Minerals v. OSHRC*, 647 F.2d 840, 845 (8th Cir. 1981) (citing *Usery v. Marquette Cement Mfg. Co*., 568 F.2d 902, 910 (2d Cir. 1977)).

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[26](...continued)
40,097 n.4 (No. 86-360, 1992) (consolidated).

[27]In its supplemental brief, Pepperidge makes an argument touching on the existence of a hazard. It claims that the National Institute of Occupational Safety and Health ("NIOSH") document *Work Practices Guide for Manual Lifting* (1981) ("NIOSH Lifting Guide"), relied upon during the inspection by the OSHA industrial hygienist to determine whether hazards existed, cannot be used to establish the existence of a lifting hazard. However, we need not reach this argument because the judge did not rely on the document in finding that the cited lifting tasks were hazardous.

Pepperidge was informed by both its workers' compensation insurance carrier, Liberty Mutual, and Jane Teed-Sparling, the corporate ergonomist from Pepperidge's corporate parent Campbell Soup, that Pepperidge employees were exposed to lifting hazards when performing the cited tasks. The record shows that beginning in August 1984, approximately four years before OSHA's inspection at the Downingtown plant, Pepperidge's corporate headquarters was told that its employees were exposed to back and shoulder injuries from lifting the cookie tins and sugar bags. (GX 287). Memoranda to the same effect for the sugar bag lifts followed in 1985 and 1986. (GX 193, 282). In her 1986 ergonomic studies of the Pepperidge plants in Richmond, Utah and one under construction in Lakeland, Florida, Teed-Sparling found that lifting 68-pound blocks of butter was hazardous and so informed the Downingtown plant physician. (GX 174, 175, 177). Teed-Sparling had later evaluated at the Downingtown plant in 1987 the roll stock, sugar bag, and cookie tin lifts and reported her findings that these were hazardous tasks to the plant's management. She made further recommendations on the tasks in 1988. (GX 179). We discuss separately whether Pepperidge recognized that each lifting task was hazardous.

Sugar

The evidence overwhelmingly establishes that Pepperidge recognized that requiring employees to lift 100-pound bags of sugar exposed them to a hazard. Both corporate ergonomist Teed-Sparling and Liberty Mutual had informed Pepperidge about the problems with lifting the sugar. As early as August 1984, Pepperidge's Norwalk, Connecticut headquarters was advised to use 50-pound bags instead of 100-pound bags at its plants to reduce employee exposures to lifting injuries. (GX 287). Similar memoranda were sent to Downingtown in January 1985, June 1986, April 1987, and May 1988. (GX 40, 192, 193, 282). In Teed-Sparling's April 8, 1987 report to Downingtown Biscuit Operations Manager George Litvak about the Downingtown plant, she described the task of lifting 100-pound

bags of sugar as "extremely excessive"[28] based on Liberty Mutual's material handling task evaluation software program.[29] (GX 39). Teed-Sparling described her lifting advice as a "'pallet of recommendations'; maybe one cheap one, one medium cost, one really expensive one."[30] The recommendations included: "[i]nstal[lation of] a scissors lift under the product pallet to eliminate low lifts initiated under 31 inches so that bags are transferred in one motion," installation of a "Coleman Vac Up manipulator" to lift and handle the bags, and expanding "the bulk metering system to include additional high volume ingredients such as sugar." Teed-Sparling had investigated the use of lighter 50-pound bags instead of 100-pound bags but did not include this option because of the cost. Litvak testified that he had made the decision that switching from 100 to 50-pound bags at $173,700 per year was too costly

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[28]In Teed-Sparling's report to Litvak, she reports on the lifting of 100 pound bags of sugar as follows:

> Measurement of job elements using Liberty Mutual's material handling task evaluation software program proved this dumping task extremely excessive - with less than 10 percent of the male and female population capable of performing the task without potential injury. Liberty Mutual research has documented that employees performing tasks with population percentage capabilities less than 75 percent are three times more susceptible to back injury. The combination of the highly excessive aspects of the dumping work station create a situation that should be rectified on a high priority basis . . . .

(GX 39).

[29]There was evidence that an employee was injured while performing this task. Employee Bonnie Vogt had suffered a "back muscle spasm" while lifting a bag of sugar on August 27, 1986 and was on work restrictions for approximately two weeks. (GX 67).

[30]Teed-Sparling's April 8, 1987 report states that "[t]he combination of the highly excessive aspects of the dumping work station create a situation that should be rectified on a high priority basis through one of the following recommendations." (GX 39). However, she testified that of her three recommendations, the use of scissor lifts would have "improved the situation, made it less stressful to the back, but certainly did not eliminate the excessive rating of the job." However, Frederick Hartman, Senior Project Engineer at the Downingtown plant, agreed that the addition of scissor lifts eliminated the need to manually lift the hundred-pound bags of sugar.

"bearing in mind that there were other less-costly solutions." A May 7, 1987 Pepperidge memorandum from Litvak to Dale Stokes, plant manager at the Downingtown plant, regarding in part the "exposure to back injury due to lifting 100 lb. bags of sugar" noted that "[t]hree possible solutions" included converting to 50-pound bags, the Coleman Vac-Up Manipulator, and the expansion of the bulk metering system, but indicated that there were no plans at that time to attempt to fund any of these projects. (GX 41).

Notwithstanding all the recommendations, employees were required to lift the 100-pound bags until two scissor lifts were purchased and installed some time after May 1989. Following the OSHA inspection, Pepperidge did eventually switch to 50-pound bags of sugar by the fall of 1990, six years after the recommendation was first made.[31] In addition, shortly after Teed-Sparling issued her April 8, 1987 report, Pepperidge installed two pallet stands that placed the sugar bags twelve inches higher (Teed-Sparling had not recommended installing pallet stands). Also, by May 1988, Pepperidge transferred one of its scissor lifts to the scaling operation in response to Teed-Sparling's recommendation that scissor lifts be installed. However, these actions did not alter the fact that employees were still lifting 100-pound sugar bags at the time of the OSHA inspection in the fall of 1988.

Cookie Tins

The evidence establishes that Pepperidge recognized the hazards involved in lifting the cookie tins. It received information about the hazards of lifting tins from Liberty Mutual, Teed-Sparling, and through injuries suffered by employees. As early as 1984, Pepperidge was informed that its employees were incurring back and shoulder injuries from lifting cookie tins. (GX 287, 288). In her April 8, 1987 memorandum, Teed-Sparling noted that

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[31]Between 1987 and 1989, Pepperidge began using fruit-grade sugar that allowed it to partially eliminate the need for the 100-pound bags because the fruit-grade sugar did not need to go through a pulverizer. However, for operations that required sifted granulated sugar, the 100-pound bags were still utilized and were still required to be lifted by employees. It is unclear from the record whether the partial switch to fruit-grade sugar was to partially eliminate the use of 100-pound bags of sugar or to simplify the baking process by eliminating the pulverization step, or both.

"ergonomic redesign is required to eliminate the excessive aspects of" tin handling, and made recommendations as to how this could be accomplished, including the use of plastic tins. (GX 39). Three Pepperidge employees received back injuries lifting tins. (GX 67). John Starcheski, who was injured on October 26, 1987, and Linda Hardy, who was injured on February 11, 1988, both experienced "low back pain" while lifting tins. Starcheski was on light duty for a short period. Sandra May was lifting tins in the assortment line on October 30, 1987, when she "felt a sharp pain in the middle of her back." Her injury was described as "upper back pain." The task of lifting cookie tins had not changed by the time of the OSHA inspection.[32]

Butter

Although the record does not contain a report evaluating the lifting of 68-pound blocks of butter at Downingtown, studies of the same task were conducted for other Pepperidge plants. Teed-Sparling had conducted an ergonomic analysis at Pepperidge's Richmond, Utah plant because of an increase in employee "complaints of cumulative trauma disorders of the upper extremities (repetitive motion injuries)." (GX 174). Also, Teed-Sparling had prepared a report including ergonomic recommendations for the plant to be constructed in Lakeland, Florida. Her ergonomic recommendations were "based on prevention of back and upper extremity injuries in high risk jobs identified from existing Pepperidge Farm bakery and biscuit plant data." (GX 175). In the November 4, 1986

[32]Review was also directed on the issue of whether the judge erred in finding that violations existed despite "the improper method of calculation used." The issue appears to have been raised in Pepperidge's petition for review, where it argued that "due to the improper method of calculation used, the Secretary failed to prove that there were any instances of alleged lifting hazard violations." On review, Pepperidge claims that the judge erred in finding that six employees were exposed to the hazard of lifting cookie tins. This argument is without merit. We find that six employees were exposed to the hazard based on two employees being exposed during each of the two shifts plus two relief workers also being exposed. The Secretary did not include relief workers in the other lifting citations. That does not affect our finding since Pepperidge does not dispute that six employees were exposed to the hazard of lifting cookie tins.

memorandum from Teed-Sparling to S. Dufner, the manager of human resources at the Richmond plant, Teed-Sparling listed the lifting of 68-pound blocks of butter as being "excessive" and its lifting a "[h]armful aspect[] of the job."[33] (GX 174). She recommended the purchase of an ingredient dumper "to mechanically dump excess weight ingredients." Teed-Sparling included this memorandum in a November 24, 1986 memorandum to Dr. Robert Snyder, the Downingtown plant physician, in which she stated that the Richmond memorandum "represent[ed] the areas of concern which should be addressed at Downingtown." (GX 177). In the December 1986 memorandum regarding the Lakeland plant, Teed-Sparling recommended the use of mechanical devices to handle the heaviest items, including "68 lb. blocks of butter," to the Manager of Project Engineering at the Pepperidge Farm Corporate Headquarters.[34] At the time of the inspection, employees were still lifting 68 pound blocks of butter, and no actions had been taken to alter this task.

Roll Stock

The record indicates that Pepperidge became aware of the lifting hazards in the roll stock area through suggestions by Liberty Mutual as well as by Teed-Sparling's efforts. Pepperidge was first informed of the hazard by the report Teed-Sparling issued to Litvak on April 8, 1987, in which she described roll stock lifting as "extremely excessive." (GX 39). She recommended that Pepperidge use a mechanical device to move the stock. When Teed-Sparling returned to Downingtown on February 4, 1988, she found that employees were using "comp vests," also known as back braces, when performing lifting tasks, an action she

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[33]On June 15, 1986, employee Roseann M. Karmilowicz felt pain in her lower back when she was lifting butter. She described it as a pulled back muscle. The record indicates that she could return to work on regular duty 11 days after the incident. (GX 67).

[34]Eventually, Pepperidge used lift carts that would permit employees to raise the level of butter on the cart to where it is needed. The record does not make clear when the lift carts were employed. During the fall 1989 follow-up inspection, employees were still lifting butter the same way as when Pepperidge was cited.

described in a February 10, 1988 memorandum as a "band aid approach."[35] (GX 27). According to Teed-Sparling, to maximize any benefits possible from fits of the back braces, employees should be given "biomechanical training from the medical department on proper lifting techniques" and told that "the [c]omp [v]est is not a machismo placebo that makes them strong weight lifters." In a February 29, 1988 memorandum to L.B. Suchowolec, Vice-President of Human Development and Training at Campbell's Soup, she stated that "no action" had been taken on the lifting problems she reported on at Downingtown with the exception of having employees wear back braces.[36] (GX 179).

Pepperidge became further aware of this lifting hazard from the back injury sustained by its employee Walter Ed Davis, who was injured in October 1987 when he "was lifting a roll of label paper onto a cart when he lost control of the roll and twisted his back." (GX 67). The injury, which was eventually diagnosed as a ruptured disk, resulted in Davis being out of work for nearly a year. A second employee, Harold Trego, was injured in June 1988 as he lowered a 120 pound roll to the floor. The injury was described as a "low back strain" both by Pepperidge and in an orthopedist's letter. (GX 67).

Pepperidge also received notice of the roll stock lifting hazard through reports from the Hazard Hounds, a "quality safety circle," established by Pepperidge to encourage employee involvement in solving safety problems.[37] According to the November 11, 1988

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[35] Teed-Sparling testified that back braces "are nothing more than band aids, they only treat the symptoms, they don't prevent the problems, and they, in some cases, in other plants where I have worked with them increase the problems because the employees all of a sudden think that they are these macho weight-lifters because they have got these nice belts on and they take greater risks than they would by not wearing them."

[36] The back brace policy was never made mandatory. (Respondent's Exhibit ("RX") 52, tab 14).

[37] The Central Safety Committee, whose membership was composed of Pepperidge's management, reviewed Teed-Sparling's memorandum concerning roll stock handling and agreed that a mechanical device should be investigated. The Committee became aware that the Hazard Hounds were working on the same problem by mid-spring of 1988. In its brief, (continued...)

minutes of this group, management had accepted their proposals to purchase web and skid or pallet dollies for use in lifting the roll stock.[38] (RX 52, tab 26). The dollies were not delivered until after the inspection, in December 1988 and January 1989. The memoranda submitted by Teed-Sparling and Liberty Mutual, the employee injuries, and the activities of the employee safety group are more than enough to establish that Pepperidge recognized the hazards of lifting roll stock.

Discussion

Pepperidge argues that the bulk of the evidence relied on by the judge cannot be used against a respondent to find recognition. It is true that the Commission and the courts have been reluctant to rely solely on voluntary safety efforts by an employer to find that the employer recognized a hazardous condition. *See, e.g., General Motors Corp., GM Parts Div.,* 11 BNA OSHC 2062, 2065-66, 1984-85 CCH OSHD ¶ 26,961, p. 34,611-12 (No. 78-1443, 1984), *aff'd* , 764 F.2d 32 (1st Cir. 1985); *Cotter & Co. v. OSHRC,* 598 F.2d 911, 914-15 (5th Cir. 1979); *Diebold, Inc. v. Marshall*, 585 F.2d 1327, 1337-38 (6th Cir. 1978). The rationale is that such reliance would "dissuade employers from taking voluntary protective measures beyond those the law requires." *Waldon Healthcare Center*, 16 BNA OSHC 1052, 1061, 1993-95 CCH OSHD ¶ 30,021, p. 41,154 (No. 89-2804, 1993) (consolidated), (citing *Kastalon, Inc.,* 12 BNA OSHC 1928, 1932, 1986-87 CCH OSHD ¶ 27,643, p. 35,975 (No.

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[37](...continued)
Pepperidge claims that Teed-Sparling's report brought roll stock handling to the attention of one of Pepperidge Farm's two Quality Safety Circles, but the record does not show that the Hazard Hounds were aware of the Teed-Sparling memo.

[38]A pallet dolly is a metal platform on wheels that runs along a track and allows employees to pull the pallets of roll stock from the storage area so that they would be able to safely reach to roll stock without having to lean forward to get it. A web dolly is a portable piece of equipment that has a lifting post on it that can be raised or lowered by a foot pedal. Web dollies combined with pallet dollies enable operators to go over to the roll and insert the lifting post into the hollow core of the roll stock, lift it off the pallet dolly using hydraulics, and then lower it and roll it over by hand to the machine location where it could be installed into the packaging machine.

79-3561, 1986) (consolidated)); *see also Diebold*. Consequently, the Commission has required other independent evidence of recognition before it will rely on such efforts. *Trinity Indus.*, 15 BNA OSHC 1481, 1485 n.8, 1992 CCH OSHD ¶ 29,582, p. 40,035 n.8 (No. 88-2691, 1992). Pepperidge invokes this precedent in arguing that the Commission should not rely on the evidence of Teed-Sparling's activities and memoranda as well as those of Liberty Mutual.

While we are troubled and reluctant to rely solely on an employer's voluntary safety efforts where there is no other evidence of a hazard, this case does not present that issue. First, there is evidence that Pepperidge was actually aware of the existence of the four lifting hazards through the injuries suffered by employees performing each of the four lifting tasks. Indeed, as early as 1984, Pepperidge's Norwalk, Connecticut headquarters was made aware of employee injuries from the sugar and cookie tin lifting tasks. Second, in contrast to the actions in the cases relied on by Pepperidge (*e.g.*, the purchase of safety shoes in *G.M. Parts),* the evidence we rely on here is more accurately described as memoranda and warnings that went unheeded rather than safety actions or efforts. Third, this record shows substantial recognition of the lifting hazards from multiple sources. Pepperidge received warnings of the cited conditions from its insurance carrier, its ergonomist, and its employees. Teed-Sparling warned Pepperidge about all four lifting tasks. Liberty Mutual warned Pepperidge about the sugar, cookie tin, and roll stock lifting tasks. Finally, the Hazard Hounds employee safety group identified roll stock lifting as being a hazardous task.[39]

Having found that the hazard was recognized, we affirm that part of the judge's decision finding violations of the general duty clause for Pepperidge's failure to free its workplace of lifting hazards. We next consider whether the violations were willful.

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[39]While it might be argued that Teed-Sparling's studies and warnings were the result of Pepperidge's "voluntary safety effort," other sources, such as the reports from the workers' compensation insurance carrier and reports of employees, are of a routine business nature. If none of the kinds of sources here may be probative of employer recognition, it is difficult to imagine the types of evidence that would be found appropriate.

Willfulness

We have already set forth the standard for finding willfulness in the recordkeeping section. Where, as here, the violation is of the general duty clause, we have held that "the Secretary's burden of proving willfulness is notably more difficult when an employer is charged with a violation of section 5(a)(1) . . . there must be evidence apart from that establishing knowledge of the hazard, from which it may be concluded that the employer intentionally disregarded or was indifferent to the safety of its employees." *General Dynamics Land Systems Div*., 15 BNA OSHC at 1287, 1991-93 CCH OSHD at p. 39,759.

As we found, Pepperidge recognized the existence of lifting hazards at its Downingtown plant. In our view, the same evidence that supports a finding of recognition establishes the first element of the willfulness test -- that Pepperidge had a heightened awareness of the lifting hazards at the Downingtown plant. Pepperidge's failure to take corrective action to materially reduce or abate these known lifting hazards demonstrates its intentional disregard or plain indifference to employee safety.

The record demonstrates that beginning in 1984, Pepperidge's corporate management received notice of the presence of lifting hazards. Pepperidge was first made aware of problems involved in lifting sugar and cookie tins. In 1986, Pepperidge's corporate management received notice of the problems posed by lifting butter. In April 1987, Pepperidge's Downingtown plant received direct notice of the problems of lifting roll stock, sugar, and cookie tins. The series of memoranda from Teed-Sparling and Liberty Mutual detailing the lifting problems did not just tell Pepperidge that a problem existed, the memoranda also informed Pepperidge how to remove the problem.

Despite receiving this specific information, Pepperidge did not act with dispatch. It was first notified of the hazard of lifting 100-pound bags of sugar in August 1984 and was advised to switch to 50-pound bags. It received further notification of the hazard in January 1985, June 1986, April 1987, and May 1988. Pepperidge was also told of the hazard by corporate ergonomist Teed-Sparling in November 1986. She recommended a mechanical

ingredient dumper. More information was received from Teed-Sparling in December 1986, April 1987, and February 1988. Teed-Sparling's April 1987 memorandum specifically recommended the scissor lifts that were later used at the Downingtown plant. Litvak's May 1987 memorandum shows that Pepperidge looked into this lifting hazard, but notes that there were no plans to fund any "[e]rgonomic [c]onsiderations" in the biscuit plant. Despite these repeated warnings, Pepperidge did not fully abate this hazard until at least the acquisition of scissors lifts approximately five years after the first warning.

Memoranda from both Liberty Mutual and Teed-Sparling warned Pepperidge of the hazard of lifting filled cookie tins as early as 1984. In her April 1987 memorandum, Teed-Sparling had recommended reducing the stack height and reducing the weight of the trays to 24 pounds as well as reducing the weight of the tins by using plastic trays instead. Pepperidge implemented the use of plastic trays, but not until 1990, about six years after it was first warned about the hazard. During this long wait at least three Pepperidge employees suffered injuries lifting the cookie tins.

As we concluded in considering whether Pepperidge recognized the hazards of lifting butter, Pepperidge's corporate management was aware of the hazard of lifting the 68-pound blocks of butter as early as November 1986. By the spring of 1987, both Downingtown and the rest of the corporation were aware of lifting hazards generally through the efforts of Teed-Sparling and Liberty Mutual. Yet Pepperidge did nothing to address these hazards until it implemented the use of lift carts some time after the fall 1989 OSHA follow-up inspection, nearly three years after an employee at Downingtown was injured lifting butter.

The April 1987 memorandum from corporate ergonomist Teed-Sparling noted the hazards of lifting rolls of stock. (GX 39). The memorandum recommended the use of a mechanical device to address the lifting hazard. Despite this warning and the October 1987 back injury to Davis that prohibited him from working for nearly a year, Pepperidge did not have the mechanical devices needed to address this hazard in place at the time of the

inspection and did not fully provide them until January 1989, more than a year and a half after Teed-Sparling's initial memorandum.

A finding of willfulness here would not be justified if Pepperidge made a good faith effort to remove these lifting hazards, even though its efforts were not entirely effective or complete. The test of good faith in this regard is an objective one--whether the employer's efforts to comply were reasonable under the circumstances. *See Tampa Shipyards*, 15 BNA OSHC at 1541, 1991-93 CCH OSHD at p. 40,104. The record shows that Pepperidge did take some action after it received written memoranda detailing the lifting hazards, but before it abated the hazards after the inspection. Pepperidge generally attempted to address the lifting hazards by instituting a back brace program by at least the time Teed-Sparling returned to Downingtown in February 1988. However, the record shows that the back braces were ineffective, that management recognized this (RX 52, tab 14), and that Teed-Sparling even viewed the braces as potentially harmful. For the sugar bag lifts, Pepperidge obtained pallet stands by mid-1987 to place the sugar bags twelve inches higher. It also began using fruit grade sugar for some operations possibly as early as mid-1987 and had transferred one scissor lift to the operation by May 1988 which partially eliminated the handling of the 100-pound bags. For the cookie tins, Pepperidge obtained sample plastic trays between late 1987 and early 1988 but did not find them acceptable. For roll stock handling, one of Pepperidge's employee safety groups began researching mechanical means of abating this lifting hazard by mid-spring 1988. However, these measures fall far short of an objectively reasonable attempt at compliance. Pepperidge employees were still performing the same hazardous tasks at the time of the inspection. Pepperidge's various budgetary and other reasons for not taking the steps recommended to abate the hazards, particularly the time Pepperidge took to abate the hazards, fail to suggest an objectively reasonable good faith effort to comply with the Act.

In sum, for the roll stock, butter, and tin lifting tasks, no abatement measures had been implemented by the time of the inspection and citation in late 1988. Pepperidge did not

complete abatement measures for roll stock until January 1989, no earlier than the fall of 1989 for butter, and some time in 1990 for the cookie tins. For the sugar lifting tasks, although Pepperidge placed the sugar on top of pallet stands to facilitate the lift, employees were still required to lift the 100-pound bags, and 50-pound bags and scissor lifts were not implemented until 1990, well after the citation was issued.

The Commission has not always been willing to base a willful violation on an employers' failure to follow an outside consultant's advice in determining willfulness.[40] *Falcon Steel Co.*, 16 BNA OSHC 1179, 1182, 1993-95 CCH OSHD ¶ 30,059, pp. 41,330-31 (No. 89-2883, 1993) (consolidated) (finding of willfulness was based on "the uncompromising language of the standard itself" rather than on Falcon's hiring of a safety consultant). Here, however, we conclude, based on our earlier discussion of the use of the Teed-Sparling and Liberty Mutual memoranda and recommendations to establish recognition, that this same evidence can be used to establish willfulness, particularly where the employer's response to safety recommendations may be fairly characterized as dilatory. *See Empire Detroit Steel Div. v. OSHRC*, 579 F.2d 378, 385-86 (6th Cir. 1978) (willful violation found where employer failed to take corrective action against a known hazard).

We therefore affirm the judge's finding of willful violations for each of the cited lifting tasks.[41]

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[40]The Commission has utilized reports prepared by an employer's consultants in finding evidence of willfulness. *See, e.g., J.A. Jones Constr. Co.*, 15 BNA OSHC 2201, 2211-12, 1991-93 CCH OSHD ¶ 29,964, p. 41,031 (No. 87-2059, 1993) (reports of engineering supervisor for employer's insurance carrier supports judge's finding that employer had not acted in a willful manner); *Coleco Indus.*, 14 BNA OSHC 1961, 1964-65, 1967, 1991-93 CCH OSHD ¶ 29,200, pp. 39,071-72, 39,074 (No. 84-546, 1991) (violation willful where employer did not correct hazardous conditions noted in reports by its independent consultant).

[41]Noting that the citations in this case were issued almost nine years ago, that Pepperidge demurred to the Secretary's proof that the lifting tasks presented a hazard, that Pepperidge chose not to seek review of this issue before the Commission, and that the Downingtown

(continued...)

Penalties

Both Chairman Weisberg and Commissioner Guttman agree that section 5(a)(1) was willfully violated but disagree on the proper number of violations of section 5(a)(1) that occurred. As discussed in their separate concurrences at the end of this decision, Chairman Weisberg would find that there were 21 separate violations of section 5(a)(1) based upon the 21 cited employees being exposed to hazards that are inherently individual in nature. Commissioner Guttman would find that there are only four separate violations of section 5(a)(1) based on the four different types of lifting tasks that were cited. However, in order to avoid an impasse in this case, Chairman Weisberg and Commissioner Guttman agree to assess a lesser penalty of $20,000 for the willful violations of section 5(a)(1) described in citation 1, items 3(a)-(d) and (f).

III. UPPER EXTREMITY MUSCULO-SKELETAL DISORDERS

This item alleged 175 separate willful violations of section 5(a)(1), in that 175 employees "were required to perform tasks involving repetitive motions in postures resulting in stresses that had caused, were causing or were likely to cause cumulative trauma disorders." The proposed penalties were $5,000 per instance, for a total of $875,000. The employees worked beside conveyor belts in the Biscuit Division of the Downingtown plant. They assembled, packed, and packaged baked cookies.

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[41](...continued)
plant has closed, we are puzzled by our dissenting colleague's suggestion that we remand the lifting citations so that "the issue can be fully developed on the record." With due respect, where an employer does not contest an issue at hearing, and does not seek our review of this issue it would seem strange to call on that employer to bear the costs of continuing to litigate that specific issue. Moreover, where the necessity for a remand and further litigation is based on the need to get a more fully developed record, it would seem odd to rely on a litigant who has already twice declined to fully litigate the issue to provide the vigorous effort presumably desired. We believe that arguments raised by United Parcel Service as *amicus curiæ* can better be addressed as part of the record in such future cases that may involve lifting citations.

A violation of section 5(a)(1) of the Act exists where: (1) a condition or activity in the employer's workplace presents a hazard to employees, (2) the cited employer or the employer's industry recognizes the hazard, (3) the hazard is causing or likely to cause death or serious physical harm, and (4) feasible means exist to eliminate or materially reduce the hazard. *E.g., General Dynamics Land Systems Div.,*15 BNA OSHC at 1280, 1991-93 CCH OSHD at p. 39,752; *Kastalon,* 12 BNA OSHC at 1931, 1986-87 CCH OSHD at p. 35,973; *Pelron Corp*., 12 BNA OSHC 1833, 1835, 1986-87 CCH OSHD ¶ 27,605, p. 35,871 (No. 82-388, 1986).

The judge found that a recognized hazard created by repetitive motion existed in Pepperidge's plant, and that it was causing or likely to cause serious physical harm. He vacated the item in its entirety, however, on the ground that the Secretary had failed to prove a feasible means of abatement.

Following a review of the tasks performed by the workers at Downingtown and the injuries which allegedly resulted from these tasks, we begin with the highly contested issue of whether a hazard exists. To address this issue we review l) the legal test for the existence of a hazard under section 5(a)(1); 2) the evidence on the existence of the alleged injury here; and 3) evidence regarding the cause of the alleged injuries. We then turn to the three further elements of a section 5(a)(1) violation.

We affirm the judge's ultimate finding that the citation should be dismissed. In doing so, we agree with the judge's predicate findings that a hazard existed, was recognized, and was causing serious physical harm. We disagree with his finding that the Secretary's proposed method of abatement of the hazard here is inappropriate under section 5(a)(1); however, we find that the Secretary has failed to meet her burden of showing that actions not taken by Pepperidge to abate the hazard at Downingtown were feasible and likely to materially reduce the hazard.

A. The Biscuit Lines

The employees at issue here all worked on lines in the Biscuit Division, where Pepperidge produced thirty to forty types of cookies and four types of Goldfish crackers. Lines 1 and 2 produced non-chocolate variety cookies. Line 3 produced Goldfish crackers. Lines 5 and 6 produced sandwich-type cookies including cookies with chocolate fillings. Downingtown also had an assortment line where different combinations of cookies were packed and packaged. Line 4 is not in issue, as Pepperidge had discontinued it before OSHA's inspection.

On lines 1, 2, 5, and 6, several employees stood by each side of a moving conveyor belt that carried baked cookies. They were called "cuppers." They held a stack of paper cups in one hand (typically their left) and, with the motion of that thumb, slid off one cup at a time. The cups dropped onto the conveyor belt, and the cuppers picked up cookies from the belt with their other hand and placed them in the cups.

The chocolate-filled sandwich cookies on lines 5 and 6 were capped manually before cupping. The top of those cookies traveled on an upper conveyor, and the bottom traveled on a lower conveyor. Employees called "cappers" took the cookie top and placed it on the cookie bottom. There were usually between six and ten employees performing capping on each line.

At the downstream end of the cupping operation a worker called a "straightener" made sure that all the cookies were properly seated in the cups and that the cups were aligned properly for the next step. If the cookies were destined for the assortment line, employees called "tinners" would remove the cupped cookies from a conveyor and put them in tins for transport to that line. The other cups of cookies were fed automatically into a bagging machine. A bag machine operator tended that machine and made sure the cups were fed properly. Once bagged, the cookies continued on a conveyor to locations where employees picked up the bags and put them into cardboard cartons for shipment.

The employees rotated from one job position to another, all within the biscuit lines. Generally, they rotated every twenty minutes, but on the assortment line they rotated once an hour. The employees worked 8-hour shifts, five days a week, not including overtime. They had a half-hour lunch break and two 15-minute breaks. Thus, they actually performed their functions for seven hours per shift. During their breaks they were replaced by relief workers, who worked a total of 5½ hours each day. There were three shifts a day, around the clock -- the a.m., p.m., and night owl shifts.

Daniel Habes, an ergonomist for the National Institute for Occupational Safety and Health ("NIOSH") who testified for the Secretary, estimated the number of repetitive motions that employees would make at different positions on the lines, and the average overall number per day.[42] Habes' specific estimates are questioned by Pepperidge.[43] However, they are sufficient to indicate the general order of magnitude of the repetitions.

Overall, Habes calculated, the group of employees who rotated through the seventeen positions on line 5 and the two positions on line 3 averaged 20,800 repetitions over a full rotation. (There were nine capping, five cupping, one straightening and two tinning positions on line 5 and two packing positions on line 3.)[44] A few of the capping jobs were being done

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[42]Habes testified to five increasingly refined sets of calculations he made from early 1989 to March 1991 to estimate the number of repetitions employees performed. Here we describe his calculations of March 15, 1991. No other witness gave an estimate of the number of repetitions employees performed.

[43]For example, Habes did not know the typical down time during the work day due to changeovers, breakdowns and other line disruptions. On the other hand, Habes testified that he learned that the employees on occasion work overtime and on weekends. He also testified that in some instances he counted more repetitions than his figures show, but that he reduced them to give Pepperidge the benefit of the doubt. He counted certain workers as having zero repetitions because the tape did not clearly show their entire movements, even though he knew they were doing repetitive work.

[44]Habes testified that the employees were *not* "self-paced" at any of those positions, contrary to Pepperidge's claim. He understood the term "self-paced" to mean that the employees are

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at twice that rate or more. The cupping jobs also were more repetitive than average. Other jobs such as straightening and tinning involved much less repetition. Habes noted that in their seven hours of actual work, that group of employees actually had twenty-one discrete tasks, so they would repeat two positions each day. Depending on which positions they repeated, their overall repetitions would increase or decrease by up to about 1000.

Another group of employees rotated among the seventeen positions on line 6 (seven capping and three cupping positions, plus several straightening and other less highly repetitive positions). Habes calculated that the average number of repetitions per employee among those seventeen positions was 17,496.

Comparing those calculations to ones he had done previously concerning all the lines, Habes gave the opinion that lines 5 and 6 were representative of all the lines regarding the number of repetitions, except line 1, which moved slower. The Secretary alleged 175 instances of violation because 175 employees were scheduled to work there on October 5, 1988, when OSHA Industrial Hygienist (IH) Roman Siletsky conducted his inspection. Overall, 350 employees worked in the division, according to Pepperidge.

B. The Alleged Injuries

The kinds of ailments that Pepperidge's employees are alleged to have suffered are commonly referred to by various names including upper extremity musculo-skeletal disorders ("UEMSDs"), cumulative trauma disorders ("CTDs"), or repetitive strain injuries (RSIs). We will use the term UEMSDs because it describes the conditions without suggesting a cause.

A specific UEMSD that allegedly resulted in disability and surgery for numerous Pepperidge employees is carpal tunnel syndrome ("CTS"). As explained by the physicians in this case, CTS consists of a constellation of symptoms including numbness and tingling in fingers, loss of muscle strength in the hand, discomfort in the hand, wrist and arm (even

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[44](...continued)
"controlling the rate at which they are receiving work." Pepperidge employees did not have that control.

the shoulder and neck in many patients). It is due to compression ("entrapment") of the median nerve, which runs through the carpal tunnel, including the wrist. In most cases it results in abnormal nerve conduction which may be measured by electrodiagnostic tests. (Tr. 5214 (Harrison), 9769-70 (Nathan), 10,164-65 (Hadler)).[45]

Other UEMSDs from which certain Pepperidge employees allegedly suffered were tendinitis (including epicondylitis), tenosynovitis (including DeQuervain's disease), trigger finger, and ganglionic cysts. As they relate to UEMSDs, those terms may be defined as follows. Tendinitis is the inflammation of a tendon. *Webster's Third New Intl. Dictionary* 2355 (1986). Epicondylitis is tendinitis at the elbow. *Stedman's Medical Dictionary* 470 (1976). Tenosynovitis is inflammation of a tendon sheath. *Webster's* at 2356. DeQuervain's disease is tenosynovitis of a thumb. *Stedman's* at 404. Trigger finger is a disorder in which a finger extends or flexes with a snap. *Webster's* at 2444. A ganglionic cyst is "a small cystic tumor containing viscid fluid and connected either with a joint membrane or tendon sheath," typically at the wrist. *Id.* at 934.

C. Key Witnesses

For ease of reference we include here a brief description of the key witnesses referred to below.

Dr. Nortin M. Hadler testified for Pepperidge. He is a board-certified rheumatologist and a clinician. He is Professor of Medicine and Senior Attending Rheumatologist at the University of North Carolina (Chapel Hill) and North Carolina Memorial Hospital. The patients he examines and treats primarily suffer from upper extremity musculo-skeletal disorders or problems. Dr. Hadler is a member of the editorial boards of the Annals of Internal Medicine and the Journal of Occupational Medicine.

Dr. Peter A. Nathan also testified for Pepperidge. He is a hand surgeon in Portland, Oregon, and a researcher in the field of the relationship of work to UEMSDs, and he has

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[45] "Tr." refers to the transcript page of the hearing before Judge Oringer.

done research on both the epidemiology of carpal tunnel syndrome and its physiological attributes. He is board-certified in both Orthopedic Surgery and Hand Surgery.

Dr. Barbara A. Silverstein testified for the Secretary as a rebuttal witness regarding Dr. Hadler's testimony. She holds a Doctorate in Epidemiology and two master's degrees -- one in nursing and one in environmental and industrial health. At the time she testified, she was research director of the Safety and Health Assessment and Research Program for the State of Washington's Department of Labor and Industries. (Subsequently, Dr. Silverstein became head of OSHA's ergonomics standard effort as a special assistant to the Assistant Secretary of Labor for OSHA from 1993 to 1995).

Dr. Robert G. Feldman testified as a rebuttal witness for the Secretary regarding Dr. Nathan's testimony. Dr. Feldman is a professor of neurology and Chairman of that department at Boston University, and he is a lecturer in neurology and occupational health at Harvard Medical School. Dr. Feldman directs an occupational neurology clinic and is medical director of the Occupational Health Program at the University Hospital in Boston.

Dr. Robert Snyder, Pepperidge's Medical Director at the Downingtown plant from about June 1986 to December 1990, was called to the stand by the Secretary not as an expert but as an adverse witness. He is board certified in emergency medicine. Dr. Snyder supervised nurses and the occasional physicians at the plant who interviewed, examined, diagnosed, and treated employees.

Dr. Robert Harrison testified as an expert witness for the Secretary. He is an assistant clinical professor at the University of California in San Francisco, where he directs the occupational medicine clinic and teaches medical school courses in occupational medicine. He is the only witness who is board certified in occupational health. He also is board certified in internal medicine and holds a master's degree in public health.

Jane Teed-Sparling, called by the Secretary as an adverse witness, was the corporate ergonomist for Pepperidge Farm's parent company, Campbell Soup Co. She holds a bachelor's degree in mechanical engineering from the University of Delaware and worked

for Campbell Soup as a design engineer and project engineer from 1979 until she became its corporate ergonomist in approximately September 1985. She has no academic background in ergonomics -- she received basic education in ergonomics from Liberty Mutual Insurance Company staff who worked with Pepperidge.

Daniel Habes has been an industrial engineer in the Applied Psychology and Ergonomics Branch of NIOSH since 1977. He holds a master's of science degree in engineering from the University of Michigan. He is not certified as a professional engineer; there are no licenses or certifications in the field of ergonomics.

Dr. Vernon Putz-Anderson has been Chief of the Psychophysiology and Biomechanics Section of the Applied Psychology and Ergonomics Branch at NIOSH since 1979. He holds a Ph.D. degree from the University of Wisconsin in human factors and applied experimental psychology. He has published extensively in the field of ergonomics. He has taught courses on musculoskeletal problems at the University of Cincinnati.

D. Applicability of Section 5(a)(1) to Ergonomic Hazards

At the threshold, Pepperidge and supporting *amici* argue that the undefined nature of the hazard (assuming it exists) precludes regulation under section 5(a)(1). In a related vein, they argue that the hazard is so undefined and/or controverted that a finding of violation would defy constitutional requirements of notice and due process. Finally, they argue that the Secretary's evidence of hazard must be gauged by the "significant risk test" articulated in *Kastalon, Inc.* 12 BNA OSHC at 1931, 1986-87 CCH OSHD at p. 35,974.

Pepperidge argues that the hazard here cannot be regulated because, as it correctly points out, no one could testify as to when repetitive motion becomes a hazard or precisely how much Pepperidge should have reduced its employees' repetitive motion. While knowledge of the threshold for injury may be essential in some cases, however, the Commission has never held that certainty as to the threshold level for injury is a prerequisite to regulation under the general duty clause.

Pepperidge cites to our decision in *Kastalon*, which drew on the Supreme Court's decision in *Industrial Union Dept. v. American Petroleum Inst.*, 448 U.S. 607 (1980) ("*Benzene*") for the proposition that the Secretary must show that a condition poses a significant risk before it can be regulated under section 5(a)(1).[46] *Kastalon* addressed the issue of potential employee exposure to a suspected human carcinogen commonly called "MOCA." We noted that the Supreme Court's decision in *Benzene* held that to establish a significant risk of harm regarding an alleged carcinogen the Secretary seeks to regulate by rule, she must present "a body of reputable scientific thought," and that the Court "noted that animal studies, epidemiological evidence and worker mortality rates could be used to establish the existence of a significant risk." 12 BNA OSHC at 1935, 1986-87 CCH OSHD at p. 35,977 (citing 448 U.S. at 656 & n.64).

The evidence of hazard in *Kastalon* was based on extrapolation from animal tests and concerned "potential" injury. In contrast, this case stems from allegations of actual injury to humans. The inability to quantify a threshold may be of great significance when there is little evidence that the putative hazard may cause injury to humans,[47] or where the question is

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[46]In *Waldon Healthcare Center*, 16 BNA OSHC 1052, 1060, 1993-95 CCH OSHD ¶ 30,021, p. 41,153 (No. 89-2804, 1993), we elaborated:

> [T]here is no requirement that there be a "significant risk" of the hazard coming to fruition, only that if the hazardous event occurs, it would create a "significant risk" to employees. There is no mathematical test to determine whether employees are exposed to a hazard under the general duty clause. Rather, the existence of a hazard is established if the hazardous incident can occur under other than a freakish or utterly implausible concurrence of circumstances.

(Citation omitted) 16 BNA OSHC at 1060, 1993-95 CCH OSHD at p. 41,153.

[47]Like *Kastalon*, *Society of Plastics Indus., Inc. v. OSHA*, 509 F.2d 1301, 1308 (2d Cir.), *cert. denied*, 421 U.S. 992 (1975), (which involved a rulemaking) also involved a carcinogen -- vinyl chloride monomer (VCM). The court observed that "[n]one of the physicians or scientists who testified could identify a safe level of exposure to VCM nor the precise

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whether it should be presumed that the risk should be controlled to the full extent feasible.[48] It is of less significance where, as here, human injury is allegedly manifest. Thus, where substantial injury is actually occurring, neither precedent nor common sense require that the finding of hazard be foresworn until there is determination of the threshold at which there occurs a substantial risk of injury.

Pepperidge further points out, however, and the Secretary's experts agree, that non-workplace factors may cause or contribute to the illnesses at issue, and that individuals differ in their susceptibility to potential causal factors. However, such characteristics (and the inability to determine threshold of harm) are not unique to putative ergonomic hazards, but inhere in other workplace hazards as well. For example, some or all of these characteristics obtain for many chemical, toxic and other workplace hazards.[49] Thus, to preclude the

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[47](...continued)
mechanism by which it produces cancer." Nonetheless, where "expert after expert recommended that this 'very virulent' carcinogen be restricted to the lowest detectable level," the court affirmed OSHA's determination to do so. *Id*.

[48]Thus, in *Benzene*, the Court held that the Secretary had erred in presuming that no level of benzene was safe. The Court expressed concern that "[e]xpert testimony that a substance is probably a human carcinogen . . . would justify the conclusion that the substance poses some risk of serious harm no matter how minute the exposure and no matter how many experts testified that they regarded the risks as insignificant. That conclusion would in turn justify pervasive regulation limited only by the constraint of feasibility." 448 U.S. at 645. The Court found, "the Secretary relied squarely on a special policy for carcinogens that imposed the burden on industry of proving the existence of a safe level of exposure, thereby avoiding the Secretary's threshold responsibility of establishing the need for more stringent standards." *Id.* at 659.

[49]Standard texts confirm the difficulties of comprehending many environmental and occupational diseases. As one text summarizes the problem:

> l. The clinical and pathologic expression of most environmentally caused diseases are indistinguishable from those of nonenvironmental origin;
>
> 2. Many diseases of occupational or environmental cause are
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> (continued...)

application of section 5(a)(1) to a hazard with the characteristics cited by Pepperidge would be to preclude the use of section 5(a)(1) for many occupational ills.[50] To be clear, characteristics such as those identified by Pepperidge may (as discussed later) bear on questions of causation or feasibility of abatement. They do not, however, *ipso facto* preclude the possibility of regulation under section 5(a)(1).

Respondent and supporting *amici* correctly point out that a cornerstone of section 5(a)(1) is the principle that employers should not be penalized for failing to take actions for which they lacked reasonable notice. Thus, they note, citing our precedent, a "broad generic definition of the hazard" is unacceptable because it does not "identify conditions or practices over which the employer can reasonably be expected to exercise control." *E.g.*, *Davey Tree Expert Co.*, 11 BNA OSHC 1898, 1983-84 CCH OSHD ¶ 26,852 (No. 77-2350, 1984). Pepperidge also cites *Diebold,* for the proposition that substantial dispute in the scientific community about whether jobs cause UEMSDs demonstrates that the general duty clause does not provide employers with the notice of ergonomic violations required by the Constitution. We agree with Pepperidge that the ability of an employer to identify a hazard

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[49](...continued)
multifactorial, with nonenvironmental factors playing a role;

3. The effects of occupational and environmental exposures occur after a biologically predictable latent interval following exposure;

4. The dose of an exposure to a noxious agent is a strong predictor of the likelihood and type of effect;

5. People differ substantially in their responses to noxious exposures.

Linda Rosenstock, M.D., M.D.H. and Mark R. Cullen, M.D., *Textbook of Clinical Occupational and Environmental Medicine*, 1-2 (1994).

[50]The Court stated in *Benzene*, "OSHA is not required to support its finding that a significant risk exists with anything approaching scientific certainty." 408 U.S. at 655. Under section 5(a)(1), the Secretary need only show that the alleged hazards at Downingtown were causing or likely to cause serious physical harm to employees there.

and the state of scientific understanding are relevant to the question of notice. In the discussion that follows these factors play central roles.

E. Existence of a Hazard

The first element of a section 5(a)(1) violation is the existence of a hazard, which turns on two factors, first, actual or potential physical harm, and second, a sufficient causal connection between the harm and the workplace.

The Secretary alleges that the dozens of reported UEMSDs at the Pepperidge Downingtown plant are instances of cumulative trauma disorders, and were caused or abetted by workplace tasks involving repetitive motion. Pepperidge responds by questioning both the existence of the UEMSDs and their cause, arguing that the "totality of the record did not establish that a cognizable causal connection existed between the cited Pepperidge tasks and the alleged instances of UEMSDs." (Pepperidge Brief at 41). The issues joined by the parties, therefore, include both the existence of injury here and the role of the workplace in causing injury of the kinds alleged.

The record contains several kinds of evidence that bear on the issues:[51]

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[51]Rather than sifting through the voluminous record in this case, and examining the numerous studies cited and relied on by expert witnesses and others at the hearing, our dissenting colleague summarily concludes that "[g]iven the broad disagreement among the 'experts' as to the hazards presented by such activities, I cannot find that 'hazard(s),' within the meaning of section 5(a)(1) . . . existed at Pepperidge Farm's Downingtown facility."

Chairman Weisberg notes that instead of focusing on the record in this case his dissenting colleague relies on a recent district court case, *Reiff v. Convergent Technologies*, No. 95-3575 (D.N.J. Feb. 28 1997), a case she contends "typifies the rejection that 'ergonomic' theories have received in the courts." The *Reiff* case involved a products liability claim under New Jersey law against a manufacturer of computer keyboards by a secretary seeking damages for personal injuries and loss of consortium. The court rejected the plaintiff's three distinct theories of defect in the keyboard: (1) it requires excessive keying forces, (2) it is not split at an angle, and (3) lack of warning notice. As to the first theory, the court noted that neither Dr. Hedge's report nor the article on which he relies bridges the crucial gap between noncompliance with industry or design specifications and liability under New Jersey

(continued...)

l. The testimony (and supporting documentation) of expert witnesses, including medical doctors presented by Pepperidge (Drs. Hadler and Nathan) and the Secretary (Drs. Harrison and Feldman), and an epidemiologist (Dr. Silverstein) and two ergonomists (Putz-Anderson and Habes) presented by the Secretary.

2. The testimony of some of the workers who reported injury, and Pepperidge Farm's medical records on all of them.

3. The testimony of individuals who acted in expert capacities in regard to the alleged hazards at Downingtown, but who were not put forth as expert witnesses. These included the corporate ergonomist (Ms. Teed-Sparling) and Pepperidge's doctor (Dr. Snyder) and nurses relied on by Pepperidge to diagnose and treat Pepperidge's workers. In addition, the record contains evidence of the findings of the outside physicians and technicians called on for further examination and treatment.

4. Pepperidge's own contemporaneous assessment of the alleged hazard.

Judge Oringer's conclusion that a hazard exists relied primarily on the medical records and the findings of those who examined and treated the workers (slip op. at 233). On

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[51](...continued)
products liability law. With respect to the second theory, the court found that the only proffered evidence linking split-angle keyboard design with reduced risk of developing carpal tunnel syndrome was a single sentence in Dr. Hedge's addendum report and that "the foundation for this opinion is most flimsy." The court noted that in drawing his conclusion, "Dr. Hedge's performed no scientific study, but rather merely referenced a single journal article, at odds with his own research, which in truth stands for a proposition much more modest than that for which he cites it." Concerning the lack of warnings, the court concluded that the harm comes not from the product itself but from the manner of the product's use, noting as an example snow shovels and back injuries and that the law does not require that snow shovels contain warnings. Similarly, the court found that plaintiff failed to prove causation in her products liability claim, namely that defects in the computer keyboard in fact caused plaintiffs injuries. In short, the *Reiff* decision is premised more on New Jersey products liability law than on ergonomics. Further, this case does not involve the Occupational Safety and Health Act in general, or the elements necessary to establish a violation of section 5(a)(1), the general duty clause.

review, Pepperidge argues that the judge's finding of hazard must be considered in light of the testimony of experts who questioned generally the existence and cause of these types of injuries. The point is well taken, and we consider the testimony of those experts presented by Pepperidge. We note additionally that the record here concerns a topic which, we presume, is the object of continuing and vigorous research. At the same time, however, we are mindful that we are called upon to decide this case -- whether a hazard existed at Downingtown based on the evidence in the record here. Before we begin to consider evidence of cause, we consider the evidence of alleged effect.

1. The Existence of Injury: The Evidence of Effect

The Secretary states that in 1986-88, 68 Downingtown employees developed UEMSDs.[52] At hearing, the Secretary sought to show these injuries through the medical records; the testimony of Pepperidge's plant physician (Dr. Snyder), nurse(s), and workers; and the testimony of Dr. Robert Harrison about the medical records.

Dr. Harrison, a professor of occupational medicine, and clinician with experience with UEMSD patients, reviewed the medical files and examined eight of the Pepperidge workers. He testified that his review showed that the patients had UEMSDs. Dr. Snyder's testimony was consistent with Dr. Harrison. In addition, a sample of those workers who reported injury testified to their injuries at hearing. They also provided testimony that, in some cases, they were advised by the Pepperidge medical staff that it would not be in their best interests to return to work because of their injury.

The medical records also evidenced examinations, tests, diagnoses, and treatments provided by members of an outside panel of physicians and surgeons (approved by Pepperidge's workmen's compensation insurance carrier, Liberty Mutual). When some of the employees were suspected of having CTS, electrodiagnostic tests were performed, and the results were reviewed by a neurologist. Where the results indicated CTS, some of the

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[52]Although the judge and the Secretary state that the records relate to 69 employees, records on only 68 were introduced into evidence.

employees were referred to a hand surgeon. The panel of 12 to 15 doctors included three hand surgeons who performed carpal tunnel releases and other surgery on the employees. The judge's decision reviews a sample of the medical records. (Slip op. at 193-201).

Pepperidge questions the bona fides of the UEMSDs alleged here, stating that "the actual diagnoses in the employees' medical records are unreliable . . . ." (Pepperidge Brief at 41). It relies on Dr. Hadler's testimony, including both his review of the medical records here and his overview of the nature of alleged UEMSD injuries. Dr. Hadler's review of the Downingtown medical records led him to conclude that the records, containing 190 diagnostic labels, were too fragmentary to evidence certain diagnoses. He questioned the carpal tunnel diagnoses because the reported surgery success rate differed significantly from that found in the case of properly diagnosed carpal tunnel syndrome.

Pepperidge argues that "most of the alleged UEMSDs experienced by Pepperidge employees were, at best, sporadic soft tissue syndromes of the types which are common among the general population." (Pepperidge Brief at 41). Dr. Hadler explained that the term "cumulative trauma disorder" has been used to embrace a variety of complaints or ills, and is not a part of medical terminology.[53] (Tr. 10,105). Injuries lumped together as CTDs include soft tissue injury (or "tendon disorders"), nerve disorders, and neurovascular ills. Drs. Hadler and Nathan state that soft tissue ills often cannot be diagnosed with certainty and may be no more than normal aches and pains.[54] Thus, in Pepperidge's view, an upsurge in

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[53]As Dr. Hadler put it, the term CTD reflects the hypothesis that "if you use your upper extremity repetitively over time, you place the upper extremity at risk for damage." (Tr. 10,105).

[54]Dr. Nathan explained that tendinitis is a capsule term for multiple complaints in the upper extremity which cannot be defined. Dr. Hadler testified that for most soft tissue ills no differential diagnosis is possible. In this regard, Dr. Hadler testified that:

> the diagnosis is based on the symptoms and on the signs of tenderness . . . There isn't very often much else to help us . . . So that's purely a bedside diagnosis, based on the clinician. It's one of the reasons why there are so

(continued...)

reported ills, as occurred at Downingtown, may not reflect the occurrence of real injury so much as psychosocial suggestion that prompts the reporting of aches and pains that otherwise would be coped with.

Pepperidge argues that the injuries alleged here may be essentially dismissed as questionable reports of soft tissue ills; however, carpal tunnel syndrome (a nerve disorder) was the single most identified injury at Pepperidge, representing almost half of the injured workers at issue. The experts appear to agree that CTS is susceptible to reliable diagnosis. The majority of those with carpal tunnel syndrome, Dr. Hadler acknowledged, "have a physiologically demonstrable abnormality. The nerve conducts normally until it goes to the wrist, and then it doesn't conduct normally across the wrist." (Tr. 10,164). Carpal tunnel syndrome, he explained, "can be defined by clinical and electrodiagnostic criteria of substantial sensitivity and specificity."[55] At oral argument, Pepperidge agreed that "the diagnoses were generally accurate when it comes to carpal tunnel syndrome which required surgery." (Oral Argument Tr. 42). Pepperidge reported that 28 employees underwent 42 separate surgical procedures, including 32 carpal tunnel releases. These injuries, again, were diagnosed by Pepperidge's panel of doctors.

In light of the above, we find that the existence of carpal tunnel syndrome among the employees at Downingtown has been established on this record. Moreover, the existence of soft tissue ills at Downingtown is supported by the Downingtown medical records, by the testimony of Drs. Harrison and Snyder, and the testimony of the workers who reported

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[54](...continued)

many multi-syllable labels applied . . . .

(Tr. 10177).

While generally questioning the existence of work-related UEMSDs, Dr. Hadler also stated that he credits patients who say that they are in pain.

[55]The experts explained that carpal tunnel is diagnosable through the pain reported by the sufferer, and clinical and electrodiagnostic tests.

injury. We additionally find the reservations raised by Drs. Hadler and Nathan about the reliability of soft tissue injury diagnoses inadequate to rebut the contemporaneous clinical evidence of injury here. (We note Dr. Nathan testified that generally he was not in a position to "second guess the Pepperidge Farm physicians and the physicians to whom the employees were referred as to whether the employees had the particular upper extremity musculo-skeletal disorders for which they were diagnosed." (Tr. 10,008). We therefore conclude that injury, particularly carpal tunnel syndrome, existed among the Downingtown workers.[56] This being the case, the question of the cause(s) of such injury, needs to be addressed.

2. Causation

Introduction

We turn now to the second prong of the inquiry into the existence of a hazard -- the causal connection between the physical harm to employees and the workplace. The record evidence indicates that the majority of UEMSDs have as yet no underlying medical condition clearly associated with them and may be related to a host of factors other than the workplace.[57] These factors include aging, acute trauma (*e.g.*, a blow to the wrist), medical

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[56]Pepperidge notes that the rate of UEMSD claims increased dramatically at Downingtown following the presentation of an educational program. However, the critical issue in the immediate context is not the reporting of injury, but its reality. Here, as discussed above, Pepperidge agrees that the diagnoses of CTS requiring surgery were generally accurate. Whether or not increased reporting was attributable to an awareness program, there is no suggestion that the carpal tunnel injuries (as opposed to soft tissue injuries) were somehow caused by an education program. We also note that Teed-Sparling acknowledged that reported illnesses increased at the Pepperidge Richmond, Utah site even in the absence of an educational campaign. (Tr. 3436).

[57]In regard to carpal tunnel syndrome, the Secretary's expert Dr. Silverstein explains:

> Despite the large number of potential causes, most cases of carpal tunnel syndrome do not have a clearly identified risk factor or cause. Most surgical investigations report a nonspecific tendon sheath thickening as the cause of carpal tunnel syndrome in most cases when no specific medical cause is identified . . .

(continued...)

conditions (*e.g.*, diabetes mellitus, gout, rheumatoid arthritis), extracurricular activities (*e.g.,* bowling, gardening, playing a musical instrument), and sex (both gender and factors such as birth control pill use and pregnancy). Thus, to determine whether workplace activities may cause UEMSDs, it is necessary to determine whether workplace activities are associated with UEMSDs, but also to disentangle other potential causes (or "confounders").

At the threshold, the parties dispute the kinds of evidence and expertise that are relevant to this task. Pepperidge's experts are medical doctors, and Pepperidge argues that medical expertise is essential to a supportable claim of causality, particularly an understanding of the biological relation between cause and effect. At the same time, Pepperidge, through its expert Dr. Nortin Hadler, contends that many reports of workplace-related UEMSDs are "iatrogenic"-- a creation of psychosocial suggestion in which the mainstream medical profession itself plays a prominent role. The Secretary, for her part, presented experts with backgrounds in epidemiology and ergonomics as well as medicine. These approaches include differing disciplines and alternative perspectives within disciplines.

As we discuss below, the record shows that no single discipline or perspective appears to have all the answers to the questions of causality such as exist here. Medical clinicians see only portions of the population; their understanding may be biased (in the technical sense of the term, and referred to as selection or accrual bias) by the happenstance of patient selection. Epidemiologists, on the other hand, focus on a broader population and provide an alternative means of approaching causal connection. As Pepperidge points out, however, the

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[57](...continued)
Barbara A. Silverstein, *et al.*, *Carpal Tunnel Syndrome: Causes and a Preventive Strategy,* Seminars in Occup. Med. 213, 216 (Sept 1986) (footnote omitted). Similarly, Pepperidge's Dr. Hadler explains that "for the vast majority" of carpal tunnel sufferers "there is no pathology to see; there is no abnormal tissue. The tissue that's there looks normal, it's chemistry is normal, its pressure . . . is elevated, but it isn't pathologically explicable. We don't understand that." (Tr. 10,164).

best that can be shown by epidemiological research is likely to be an association between factors. Of course, not every association equates to the demonstration of causality. This is particularly so where, as in this case, there are many alternative factors that might cause or facilitate UEMSDs. Moreover, there is dispute here about whether the research that has been done even consistently shows associations and, if so, whether the research is well founded.

In resolving this dispute, we must recognize the limitations of science, but also recognize, as the *Benzene* decision and much public health decision making has, that there are illnesses or hazards that need to be addressed even in the face of imperfect understanding. *Society of Plastics Indus., Inc. v. OSHA*, 509 F.2d 1301, 1308 (2nd Cir.), *cert. denied*, 421 US 992 (1975) (under the Act, "it remains the duty of the Secretary to act to protect the workingman, and to act even in circumstances where existing methodology or research is deficient"). At the same time, we must recognize that decisions based on imperfect knowledge can compound harm, as well as alleviate it, and there must be sufficient clarity in the state of knowledge to provide notice to employers of their obligations under the Act.

In analyzing the record evidence of causation we will group that evidence into several categories: clinical evidence pertaining to Pepperidge's own employees, the opinions of the clinical experts who testified here, the rate of injury at Downingtown, epidemiological research, studies of the effect of intervention on injury, evidence on the biological plausibility of the Secretary's position, and other research or testimony bearing on the issue of causation. Some of the witnesses spoke to more than one of these categories.[58]

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[58]Dr. Hadler, a witness for Pepperidge whose testimony is discussed at length below, set forth six categories of evidence on which he relied in reaching his conclusions. These are: l) the epidemic of "Repetitive Strain Injury" that took place in Australia in the 1980's, 2) clinical literature and the opinion of clinicians and other experts, 3) epidemiological studies, 4) Dr. Silverstein's epidemiological studies, 5) studies of ergonomic intervention, and 6) his own personal experience and research.

(continued...)

a. Clinical Evidence Regarding Injuries To Pepperidge's Employees

The Secretary called on Dr. Snyder, Pepperidge's medical director at the Downingtown plant, as an adverse witness.[59] In addition to Dr. Snyder and his staff, as noted above the patients were referred to an outside panel of medical doctors under the auspices of Pepperidge's insurance carrier (Liberty Mutual). This panel included several hand surgeons and several specialists in rheumatology and confirmed the existence of UEMSDs in the Pepperidge workforce. Judge Oringer's decision reviews a sample of the medical files. The Secretary also called on Dr. Harrison to testify on the contents of the medical records.

Judge Oringer found, and the record shows, that in the course of diagnosing UEMSDs Pepperidge's own medical staff attributed their cause to the tasks at Downingtown. At the hearing Dr. Snyder testified that "there is no question that repetitive motion plays a part in

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[58](...continued)
Similarly, the Secretary's expert, Dr. Silverstein, set forth criteria which epidemiological experts use to test associations between exposure and injury in the absence of certainty as to biological cause: 1) the existence of temporal relationship -- *i.e.*, whether the data shows that the cause occurred before the effect, 2) the strength of the association between exposure and illness, 3) the likelihood that there are alternative explanations ("confounders") for the effect, 4) biologic plausibility -- whether the hypothesized relationship coheres with current biological knowledge, 5) whether the frequency of effect varies with the frequency of exposure, and 6) whether the association is consistent with other findings. *See* GX 116 at 338 et seq. The criteria identified by Dr. Silverstein are employed in the epidemiological research in the record and generally used by researchers. *See, e.g.*, Gordis, *Epidemiology*, at 175-181. *See also Bowers v. Northern Telecom, Inc.*, 905 F. Supp. 1004 (N.D. Fla. 1995); *Reference Manual on Scientific Evidence* 161 (Federal Judicial Center, 1994).

We found the categories suggested by Hadler and Silverstein instructive and, as will be evident, have considered them in analyzing this record.

[59]We note that the judge treated Dr. Snyder's testimony as expert testimony. As Dr. Snyder was offered as a fact witness and was not certified as an expert under the Federal Rules of Evidence, we do not treat him as an expert. However, we do find his medical opinions regarding the worker injuries he diagnosed and treated while at Downingtown to be compelling testimony and consistent with the expert testimony.

this." (Tr. 4802). Dr. Harrison read into the record the findings and opinions of the treating physicians and nurses reflected in Pepperidge's medical records, and he interpreted them.[60] Dr. Harrison testified that Pepperidge's medical records provided a sufficient basis for him to form his own opinion as to the specific UEMSD that each of the 68 employees suffered, and the cause of that UEMSD. His opinion was that the cause of each employee's UEMSD was their repetitive motion jobs on the cookie lines at Downingtown.[61]

Pepperidge's records reveal many instances where the physicians and nurses who examined and treated the employees attributed their UEMSDs to their biscuit line jobs. For example, Judge Oringer noted the statement of Pepperidge panel physician Ward regarding the first employee, A1, that her "symptoms are consistent with irritation of her ulnar nerve or left cubital tunnel syndrome. This is unrelated to her previous problem [CTS]. However, *I feel it is caused by her work*." (Emphasis in original).[62]

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[60]Those opinions and diagnoses are admissible in evidence under Federal Rule of Evidence 803(6). They are records of "acts, events, conditions, opinions, and diagnoses" made at or near the time by, or from information transmitted by, a person with knowledge of them in the course of Pepperidge's ongoing medical program. It was the regular practice of that medical program to keep such records. Pepperidge has not preserved any objections it ever may have had to admission of those records.

[61]The judge found that Dr. Harrison has a "fixed position" and "strong opinion" that UEMSDs "very often, if not most times when symptoms develop, can be shown to be related to working conditions." However, the judge found and we agree that he offered valid expertise.

[62]Employee A3 reported a "severe strain of the left upper arm" followed by continuing pain and swelling in the area. As to the continuing problems, Pepperidge panel physician McChesney advised Dr. Snyder: "I think that she had *probably had a reaction from continued, repeated stressful manipulations of her left upper extremity on the job*." (Emphasis added). Dr. McChesney also performed an EMG on the employee, and the "findings were felt to be consistent with an early developing carpal tunnel syndrome on the left side even though the absolute values did remain within normal limits." The employee had CTS surgery shortly thereafter.

As to Employee B2, Dr. Snyder wrote to Scot Maxwell that she:

> has had *multiple problems with her hands and wrists resulting from* job related

(continued...)

The judge found the opinions of the medical personnel treating the employees "deserve great weight insofar as the etiology of the entire spectrum of injuries and/or illnesses" involved here. (Slip op. at 193). The judge summarized his views:

> [The employees] were sent to various panel physicians . . . . Some were specialists in rheumatology; others were surgeons who performed carpal tunnel releases and other surgery on the employees and some who were expert in performing electromyographic studies. These physicians found the upper extremity musculo-skeletal disorders of the employees occupationally related . . . and all of these physicians personally examined and treated the employees complaining of these upper extremity musculo-skeletal disorders . . . . I conclude that most, if not all of these physicians, including Dr. Snyder, had the opinion that these conditions were for the most part, occupationally related.

In sum, the medical personnel who treated the injured workers at Downingtown were of the view that the injuries were substantially caused by work tasks.

b. Opinions of Expert Clinicians

We turn now to the views of several clinicians who offered testimony pertinent to the question of causality--Drs. Hadler and Nathan for Pepperidge and Drs. Harrison and

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[62](...continued)

> *repetitive motion injuries*. She has had a carpal tunnel release surgery and a recurring ganglion. Dr. McChesney, the surgeon involved with her care, indicated in phone conversation today that *she was at extremely high risk for repeated problems as long as she is involved with repetitive motion activities using the hands and forearm.*
>
> Because of this potential for continued problems, I feel that it is prudent to restrict [that employee's] work activities. *She should be restricted to jobs that do not involve repetitive fine motor movements of the hands and wrists and forearm*.

As to employee C2, Pepperidge panel physician Rosen wrote Pepperidge:

> [She] is a patient of mine who has had very refractory tendinitis of her arms. I feel that she can start once again returning to work on October 19. *I would recommend that she begin not full time in that I am afraid that there will be a recurrence and once again she would most likely end up again on disability*.

The above quotations come from medical records. (GX 64).

Feldman for the Secretary. At the outset, we note that experts caution that clinical evidence may have limited value in the assessment of cause, because of bias (selection or accrual) that may inhere in judgments arrived at from patient populations derived from practice. (*E.g.*, Tr. 10,510, 10,599). Thus, the patient populations of a particular clinician may differ as to average age or other characteristics from the employees in the production line at Downingtown.[63]

Dr. Hadler offered extensive testimony both from his own experience and regarding certain studies.[64] Dr. Hadler's opinion was that the "CTD hypothesis" is "highly untenable" for carpal tunnel syndrome and "very marginal" for tendinitis. (Tr. 10,255-56). However, Dr. Hadler's overall testimony leads us to question the fit between the assumptions he employed and the facts in this case.[65]

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[63]For example, Dr. Hadler testified that the majority of his patients were young people with systemic diseases such as rheumatoid arthritis or lupus, and not people who work on production lines such as that at Downingtown.

[64]In addition to addressing many of the studies proffered by the Secretary, Dr. Hadler testified on his own research on Burlington Textile and US West workers, on the UEMSD endemic in Australia, and about studies put in evidence by Pepperidge, including (1) P.A. Nathan, M.D., *et al., Occupation as a Risk Factor for Impaired Sensory Conduction of the Median Nerve at the Carpal Tunnel*, 13-B J. Hand Surgery 1 (RX 45); (2) Jeffrey N. Katz, M.D., *et al., The Carpal Tunnel Syndrome: Diagnostic Utility of the History and Physical Examination Findings*, 112 Annals of Internal Med. 321 (March 1, 1990) (RX 79); and (3) John R. Schottland, M.D., Gordon J. Kirschberg, M.D., FRCP (C), *et al., Median Nerve Latencies in Poultry Processing Workers*, 33 J. Occup. Med. 627 (May 1991) (RX 65A). The Nathan and Schottland Studies are epidemiological research. The Katz study, however, focuses on the efficacy of tools for diagnosing CTS, and not its causes. Dr. Hadler's Burlington and US West work and the Australia endemic are discussed *infra*. Hadler also testified regarding "23 electrodiagnostic studies" of worker populations (Tr. 10,196-97), but these studies were not specifically identified and are not part of the record.

[65]The concept of "fit" recognizes that testimony may accurately state scientific knowledge or propositions but may nonetheless not fit the facts of the case. As explained in *In Re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717 (3d Cir. 1994):

> For example, animal studies may be methodologically acceptable to show that

(continued...)

Dr. Hadler testified that in his opinion most of the UEMSDs at issue were merely soft tissue injuries.[66] (*E.g.*, Tr. 10,223, Pepperidge Brief at 41). However, as we have already found, numerous injuries at Downingtown were CTS, which Dr. Hadler admits is diagnosable. Thus, assuming Dr. Hadler is correct that reported soft tissue ills typically reflect normal aches and pains, this observation does not cover the facts here.

Dr. Hadler testified that "repetitive motion where the usages in and of themselves are comfortable and customary, does not increase the likelihood that individuals will suffer carpal tunnel syndrome."[67] (Tr. 10,189). "Comfortable and customary," he explained, means "things that any one of us could do without discomfort; that any one of us would be willing to do without fear." *Id.* Dr. Hadler acknowledged the term is not used by others and the judge noted that its "exact meaning" is hard to understand. Dr. Hadler did provide context for comfortable and customary activity, contrasting it to violent actions such as a blow to the wrist or the use of a jackhammer. He testified that "having looked at the tasks from which

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[65](...continued)

> chemical X increases the risk of cancer in animals, but they may not be methodologically acceptable to show that chemical X increases the risk of cancer in humans. *Daubert* explains that, "'[f]it' is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes.

35 F.3d at 743 (citing *Daubert v. Merrell Dow Pharm., Inc.,*509 U.S. 579, 591 (1993)).

[66]Dr. Hadler opined that soft tissue injuries are ubiquitous and may be indistinguishable from normal aches and pains. Reporting of such injuries, he explained, may reflect a setting in which such reporting is encouraged instead of simply "coping." (*E.g.*, Tr. 10,261-62, 10,234-35).

[67]Pepperidge notes that, at one point, Dr. Hadler seemed to go even further, testifying without the "comfortable and customary" qualification that "there is enough data for me to feel confident that repetitive motion of the upper extremity does not increase the likelihood that you will be afflicted with carpal tunnel syndrome, entrapment neuropathy." However, that statement differs from other statements of his. His failure to limit it in that instance to "comfortable and customary" repetitive motion appears unintentional. Subsequently, the judge corrected Pepperidge's counsel for characterizing his view without that limitation.

this sample emerged [Pepperidge jobs], they are well within my concept of comfortable and customary elements." (Tr. 10,319-20). At the hearing, Hadler testified that he does not know whether performing biscuit line jobs for a full shift, as the employees do, would be comfortable for them. He agreed that the employees who do those jobs would be the ones best able to know whether the jobs are comfortable. (Tr. 10,508). We also note that Dr. Hadler himself has acknowledged in his writings that the inquiry must be not just whether a given task is comfortable and customary but also whether repetition of that task can lead to musculoskeletal damage over time.[68]

In any event, numerous employees testified in effect that their repetitive motions were not comfortable. Irene Anderson, a production helper in the biscuit packaging department for

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[68]*See* Nortin M. Hadler, *Cumulative Trauma Disorders: An Iatrogenic Concept*, 32 J. Occup. Med. 38 (1990) ("The issue we are considering is whether any particular musculoskeletal usage which in and of itself is reasonable, comfortable, and customary and which can be repeated without undue distress can lead to specific musculoskeletal *damage* over time.") (Emphasis in original). (RX 30). Further, Dr. Hadler's opinion was less than unequivocal. He conceded that repetition may cause "symptoms" and, in response to examination by Pepperidge counsel, testified:

> Q. Doctor, do you have an opinion based on a reasonable degree of medical certainty as to whether repetitive usage of the upper extremity causes the soft tissue syndromes?
>
> A. That's also not quite such a simple answer. . . . As we've been discussing here, the answer is that a certain amount of usage is important for the health of your soft tissue and that the prevalence of the soft tissue syndromes is such that the illness . . . becomes almost ubiquitous in the course of a finite number of years.
>
> Those are the facts, and in between those facts, it's very hard to give you a straightforward answer. . . . It may be that usage does more than make the symptoms worse. Usage actually can cause them, but it's equally true that usage can help therapeutically and usage can maintain the integrity of the normal structural [sic]. So, usage is important for soft tissue health, usage is at some level involved with soft tissue syndrome symptoms.

(Tr. 10,299).

12 years, testified that she had complained to Pepperidge managers about line speeds "many times."[69] Other employees testified to the same effect. For example, line leader Polly Slonaker testified that she passed on to managers complaints she received from various employees, before OSHA's inspection, that the line speeds were too fast. Line leader Diane Gillie, a 13-year veteran of the biscuit lines, testified that she reported the same kind of complaints from line workers to Area Manager Tim Conway. Rosemary Ford, who had worked in the biscuit lines for 19 years, the last six or so years as a relief worker, testified that she had complained to line leaders about excessive line speeds. Barbara Stoltzfus, also a veteran of 19 years in the biscuit lines, testified that she had complained to Conway about line speeds several times during the last few years, that she believed she had complained about them during departmental meetings in the presence of supervisor Debbie Hall and Human Resources Manager Scot Maxwell, and that she had complained to her line leaders about them as well.

Further, Pepperidge's corporate ergonomist Teed-Sparling identified among the employees' jobs numerous "harmful postures, documented from ergonomic research, leading to repetitive motion injuries of the upper extremities."(GX 39). And Dr. Silverstein, after viewing the same videotape that Dr. Hadler saw, was of the opinion that the capping, cupping, tinning, case packing, and assortment line packing and boxing were not comfortable, given the repetitive nature of the activity and the length of time that they had to be performed.

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[69]Anderson said she had complained to various Pepperidge supervisors, including Debbie Hall, Tim Conway, and Biscuit Operations Manager Michael Jackson, and that she "always complained about it" when her packaging group met with the area managers. Also, she testified that she and "a lot of other people" complained to managers before the OSHA inspection at departmental meetings, which were held two or three times a year. She believed that those complaints did not result in improvements.

In sum, the record evidence does not support a finding that these jobs were comfortable and customary, and accordingly, Dr. Hadler's thesis falls short of rebutting the Secretary's evidence as to causation.[70]

Dr. Peter Nathan is another clinician who appeared as Pepperidge's witness and testified generally on UEMSDs.[71] Dr. Nathan testified that the work performed by the Pepperidge employees could cause tendinitis, including DeQuervain's disease, and possibly trigger finger, both of which appear in this record. (Tr. 10,009-10). Dr. Nathan testified that the primary causes of carpal tunnel syndrome were aging and obesity, but stated that "in the vast majority of individuals" repetitive motion is not responsible for CTS. He agreed that symptoms in those who have underlying slowing of nerve conduction might only appear with work duties. (Tr. 10,009).

Dr. Feldman, the Secretary's witness, testified in response to the judge's query concerning "what is the majority opinion in the field" that "it is the common opinion and consensus that repetitive motion and work of this nature is a causative factor in median nerve entrapment and carpal tunnel syndrome." (Tr. 10,979-80). He testified, "I find it inconceivable that carpal tunnel syndrome can occur in an individual whose history indicates hyperextension and hyperflexing [and] the problem that they have is not related to that activity." (Tr. 10,971).

We find that the weight of the clinical opinions here support the proposition that at least some of the UEMSDs were caused by the work. Testimony of three of the four expert clinicians supported the proposition that repetitive motion may cause some of the kinds of injuries at Downingtown. Further, Dr. Hadler's hypothesis that UEMSDs cannot be caused

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[70]Dr. Hadler also testified that "some leading thinkers" in UEMSDs expressed opinions in agreement with his own. (Tr. 10,287-91). Direct evidence of the opinions of these additional clinicians are not in the record, however, and Dr. Silverstein testified that the experts mentioned by Dr. Hadler of whom she is aware do not support his position. (Tr. 10,593-97).

[71]Dr. Nathan testified as to two areas of research he had performed. We address his studies of the biological causes of CTS and the epidemiology of CTS *infra*.

by customary and comfortable actions does not fit the case here where there is ample testimony by those on the scene -- including Pepperidge's corporate ergonomist and workers -- that the tasks at issue were not comfortable particularly in light of the high number of repetitions. Similarly, Dr. Hadler's view that reports of workplace related UEMSDs are typically claimed soft tissue ills that are a function of psychosocial factors does not fit a case such as this where many instances of carpal tunnel syndrome were diagnosed.

c. Injury Incidence at Downingtown

Drs. Harrison and Silverstein undertook to calculate the incidence of carpal tunnel syndrome of biscuit line employees at Downingtown and relate it to that found in other populations. Data on the rate of occurrence of illness is an essential tool in understanding causation. Researchers refer to the prevalence and/or incidence of a disease, the former being a snapshot of an illness' presence in a population at a point in time, the latter being a measure of the number who develop an illness in a given period. When data for a given population are known, they can be compared to those experienced in further populations. The parties agree that the baseline study for carpal tunnel syndrome is a study conducted by the Mayo Clinic of the general population in the Rochester, Minnesota area in 1961-1980. (*E.g.*, Tr. 10,227). The study found an age adjusted incidence of 105 instances of carpal tunnel per 100,000 person years (or about 1 for every 1,000 persons per year), with the rate for men at 52 and that for women at 149. Dr. Silverstein calculated the incidences at Downingtown to be 7.5 per hundred worker years for 1987, and 12.5 per hundred worker years for 1988, and an overall rate of 7.0 per hundred worker years for the 1986-88 period. Based on this data she calculated that the Pepperidge working women had 28.16 times the incidence of carpal tunnel experienced by the working women in Washington state (GX 321), and 41.41 times the women in the Mayo Clinic study.[72]

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[72]J. C. Stevens, M.D., *et al., Carpal Tunnel Syndrome in Rochester, Minnesota, 1961 to 1980*, 38 Neurology 134 (Jan. 1988) (GX 90). The workforce at Pepperidge was (continued...)

Pepperidge questions the calculations on several grounds. First, it notes that incidence data alone do not prove causation, a point with which the Secretary agrees. Next, it notes that the rate of reporting CTS has been "increasing dramatically" and it is therefore inappropriate to compare 1986-88 Downingtown data with 1961-1980 Mayo Clinic data.[73] This point is also well taken. Dr. Silverstein testified, however, that based on the assumption that the Mayo clinic data showed a 30 percent increase in the rate from 1976-80, she assumed two further 30 percent increases. Pepperidge also states that the reported injuries may have reflected the UEMSD awareness program conducted at Downingtown. It is possible, and Dr. Silverstein agreed, that increased reporting reflected increased awareness. However, as we have found, reports at Downingtown also reflect real injury.

Pepperidge's primary critique involves the role of confounders. Through cross-examination, Pepperidge identified alternative factors with which many of the injured were associated. Dr. Harrison, who reviewed the medical files, testified that he did not believe these identified factors were responsible for any of the injuries at Downingtown. Dr. Silverstein, Pepperidge notes, did not rule out the possibility that non-occupational factors could have contributed to causation of carpal tunnel syndrome cases at Downingtown. Pepperidge further notes that the Mayo Clinic study involved the entire population, including young girls (which presumably reduced the incidence there, since CTS increases with age).

While the record does show that those injured at Downingtown were exposed to other potential causes, Pepperidge did not undertake to show, and the record provides no clear basis for concluding, that confounders were present at Downingtown in nearly sufficient degree to explain differences between Downingtown and other populations of the magnitudes

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[72](...continued)
predominantly female.

[73]The Mayo Clinic researchers found that age-adjusted incidences increased from 88 during the 1961-65 quinquennium to 125 during the 1976 to 1980. They suggested that the change "probably reflect better recognition rather than a true increase in incidence rates."(GX 90 at 134).

shown. Thus, for example, some of those who were injured at Downingtown had hobbies that have been associated with CTS, but Pepperidge did not argue, and it is not evident from the record, that the Pepperidge population engaged in such hobbies to a significantly greater extent than did those in the comparison population.[74]

In sum, Pepperidge raises reasonable questions about the calculations. However, the incidence of carpal tunnel injury at Downingtown is substantially in excess of that found in other populations. While Pepperidge points out, and it is undisputed, that many factors other than work may cause carpal tunnel, there is nothing that has been pointed to in the record to indicate that these other factors were present at Downingtown in sufficiently disproportionate measure to explain the high incidence rate at Downingtown.

d. Epidemiological Evidence

There are several types of epidemiological studies, each with limits and advantages.[75] A cohort (or prospective) study involves the selection of one group of individuals exposed to the hypothesized hazard and a second (control) group of non-exposed individuals, both of which are followed over time. The populations are followed to compare the incidence of

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[74]Similarly, while the Mayo Clinic study included women of all ages (and carpel tunnel appears to be a function of aging), Pepperidge did not undertake to show that any difference in population samples was sufficient to explain (in substantial part, if not in whole) the magnitude of difference in incidence.

[75]Epidemiology is the field of public health that studies the incidence, distribution and cause of diseases. Several kinds of biases (in the sense of limitations on study design or implementation) inhere in epidemiological research. As particularly relevant here, these include:

l. Selection bias; the population being sampled is not adequately representative.

2. Confounding bias; the failure to properly account for factors that may cause the ill other than the potential cause under investigation.

3. Information bias; the failure to adequately measure exposure or health effects. *See generally*, *Reference Manual on Scientific Evidence, supra* note 58, at "Reference Guide on Epidemiology."

disease that develops. In a case control study individuals who are known to have already developed disease are compared with a control group who do not have it, with the investigation focused on potential differences in past exposure. In a cross-sectional study a population is selected to determine the presence (or absence) of disease and exposure at a snapshot in time. The majority of the studies in the record are cross-sectional, but the experts agreed that the ideal test of causality would be large-scale prospective cohort studies with well-defined measures of exposure and health effect.[76]

Limits are inherent in research on workplace populations. Workforces consist of populations of human beings who differ in many ways, whose jobs may change, and who may leave the workplace altogether. In the case of UEMSD research there is also difficulty in defining and measuring work,[77] agreement that there are a large number of potential factors that may cause UEMSDs, and questions about the efficacy of diagnostic tools.

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[76]As Dr. Silverstein explained, "only prospective studies provide convincing evidence, by showing that causal factors strongly predict the development of carpal tunnel syndrome, and then by showing that the elimination of these causal factors is followed by a reduction in the incidence and severity of the syndrome. Such studies are costly and difficult to conduct successfully." (GX 125).

A 1991 literature review (GX 310) explains:

> Such [longitudinal] studies often are more costly and demand repeated time away from work for each participant. Many employers are reluctant to agree to this, especially in an unexposed population where there are few potential gains to employers or workers. Thus, appropriate controls can be even more difficult to find than with cross-sectional studies.

[77]As noted in Asa Kilbom, *Intervention Programmes for Work-Related Neck and Upper Limb Disorders: Strategies and Evaluation*, 31 Ergonomics 735-47 (1988) 67 (May 1988) (GX 155 at 742):

> Previous studies have demonstrated that individual variations in work technique are large, even among individuals who perform exactly the same work techniques . . . .

The Secretary's Dr. Silverstein was the sole witness presented as an epidemiologist to testify here. She testified both on her own research and her conclusion, based on the range of epidemiological research, that repetition is likely to have caused injury at Downingtown. However, epidemiological research was addressed to some degree by all the expert witnesses; on behalf of Pepperidge Dr. Hadler offered testimony critiquing Dr. Silverstein's views of the epidemiological literature, and Dr. Nathan testified about his own study of worker populations.

Pepperidge questions the probative value of epidemiology in demonstrating causality. Pepperidge says that as a non-physician, Dr. Silverstein could not provide "legally sufficient rebuttal" to Dr. Hadler's medical opinion on the causality of UEMSDs. Pepperidge states that epidemiological evidence that Pepperidge employees experienced a higher incidence of UEMSDs than those in comparable settings "establishes nothing more than an association between the work duties and the injuries," and that "[s]uch an association falls far short of what is required under the Occupational Safety and Health Act . . . ." Alternatively, Pepperidge argues that the epidemiological research of record supports its views, and not the Secretary's.

At the threshold, we reject Pepperidge's argument that epidemiological research may be of no probative value in a case such as this. Pending clear understanding of biological cause, medical and public health practitioners have relied on epidemiological data to understand and prevent ills.[78] We also note that Pepperidge's argument that as a non-physician Dr. Silverstein could not provide legally sufficient rebuttal to Dr. Hadler misses the mark. Dr. Silverstein did not purport to testify as an expert on diagnosing UEMSDs or on the biology of UEMSDs. Rather, as an epidemiologist, she sought to testify on what could be known based on data related to the association of UEMSD injury -- as diagnosed by

[78]Indeed, as noted, epidemiological evidence is referred to in *Kastalon* and *Benzene*. Pepperidge's underlying point, however, that epidemiological evidence must be viewed with caution is well taken.

others -- with potential causal factors. Pepperidge does not question that Dr. Silverstein is a qualified epidemiologist who, in fact, has performed UEMSD research that is recognized as central to the developing body of research literature.[79]

In light of the significant number of epidemiological studies in the record, their disparity in design, quality, and outcome, and dispute among the experts as to their quality and import, we discuss Dr. Susan Stock's meta-analysis as a means of focusing on the most relevant epidemiological data in the record. A meta-analysis combines data from different studies to draw conclusions based on a larger population than any one study can analyze. (Tr. 10,633-34). In 1991, Dr. Stock, then a resident in community medicine at McMaster University, Hamilton, Ontario, Canada, published a meta-analysis of studies conducted by other researchers on the relationship between workplace factors and the development of UEMSDs. Susan R. Stock, M.D., *Workplace Ergonomic Factors in the Development of Musculoskeletal Disorders of the Neck and Upper Limbs: A Meta-Analysis*, 19 Am. J. Indus. Med. 87-107 (1991) ("Stock") (GX 310).

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[79]Pepperidge cites three cases. In *Edmonds v. Illinois Central Gulf Railroad Co.*, 910 F.2d 1284 (5th Cir. 1990), the Fifth Circuit found that the district court committed reversible error by permitting a clinical psychologist to testify about the causal link between stress and heart disease. The court found that "the question whether stress worsened the plaintiff's coronary artery disease is a medical issue that is plainly beyond the witness's expertise in the field of psychology." *Id*. at 1287. Here, too, Dr. Silverstein might well have been beyond her experience if asked to discuss particular medical histories. She was not beyond her experience in discussing what could be learned from data on population, with medical data supplied by others (in the case of Downingtown, Dr. Harrison and those doctors whose medical records Dr. Harrison reviewed). Similarly *Niklaus v. Vivadent Inc., U.S.A.*, 767 F. Supp. 94 (M.D. Pa. 1991), *aff'd without published opinion*, 986 F.2d 1409 (3d Cir. 1993), involved a personal injury case in which a non-medical doctor was found unqualified to make a medical diagnosis (and the witness's examination was limited to measuring performance on eye charts). Finally, *Sample v. Schweitzer*, 694 F.2d 639 (9th Cir. 1982), involved a psychologist who was found unqualified to testify about the medical implications of evidence or the validity of conclusions presented in a physician's reports about a social security claimant. Again, Dr. Silverman's testimony relied on diagnoses made by medical experts.

Stock reviewed 54 studies based on screening criteria, and assessed them for validity, compared the study findings (to the extent data permitted), and evaluated the surviving studies to assess causality. In assessing validity, studies were rated on: selection bias, nonrespondent bias, comparability of study and control groups, accounting for confounders, validity of exposure and outcome measures, and blinding of assessors. In assessing causality, Stock looked at evidence of temporal relationship, strength of relationship, dose response, and the ruling out of competing hypotheses.

Ultimately, three studies met Stock's inclusion criteria: studies by witnesses Nathan[80] and Silverstein[81] and a study by Finnish researchers. (GX 154). Stock found that all three studies "found a statistically significant relationship between exposure and at least one of the relevant primary outcomes." (Stock at 95). Stock concluded that:

> There is strong evidence of a causal relationship between repetitive, forceful work and the development of musculo-skeletal disorders of the tendons and tendon sheaths in the hands and wrists and between those exposures and carpal tunnel syndrome. The study by Silverstein et al was the only one that met the criteria needed to make causal inferences and was the most methodologically rigorous.

(*Id*. at 100).

Dr. Silverstein's study examined the prevalence of CTS among 652 workers in jobs where the specific hand force and repetitiveness characteristics were estimated. The study population performed 39 different jobs at seven different industrial sites.[82] The jobs were categorized into four exposure groups, ranging from low force/low repetition to high

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[80]P. A. Nathan, M.D., *et al., Occupation as a Risk Factor for Impaired Sensory Conduction of the Median Nerve at the Carpal Tunnel*, 13-B J. Hand Surgery 167 (May 1988) (RX 45).

[81]Barbara A. Silverstein, Ph.D., *et al., Occupational Factors and Carpal Tunnel Syndrome,* 11 Amer. J. Ind. Med. 343 (1987) (GX 114).

[82]The study was initially conducted as a doctoral dissertation. (GX 113).

force/high repetition. Workers in the low/force low repetition group served as an internal comparison group for the other three groups.

Dr. Silverstein found that CTS was strongly associated with high-force high repetitive jobs and to a lesser extent with low force/high repetitive and high force/ low repetitive jobs. Repetitiveness appeared to be a stronger risk factor than force. Neither posture nor gender were major confounding variables. Vibration, however, appeared to be an important confounder.

While Dr. Hadler had initially critiqued the Silverstein research in his published work, he acknowledged its strengths in his testimony. On cross-examination, he agreed that the participation rate was "good," and "one of the many good features of this study" (Tr. 10,404-05) and that the study had "many strengths" including its treatment of gender as a potential confounder. While his articles criticized Dr. Silverstein's failure to consider the subjects' prior medical history of UEMSDs, on cross-examination he acknowledged that that deficiency was not critical. (Tr. 10,412).

The most troubling concern raised by Dr. Hadler involved Silverstein's failure to employ electrodiagnostic testing in diagnosing CTS.[83] On behalf of his position, Dr. Hadler cited a study of CTS patients which compared electrodiagnostic testing with alternatives. (RX 79).[84] The study casts doubt on the utility of traditional methods, but did find that the

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[83]Dr. Silverstein's study also showed that injury was negatively associated with years on the job, which might be presumed to contradict an effect from repetition. She attributed this result to the healthy worker effect -- those who were injured left work earlier than those who were not injured. Thus, she suggested, the presence of a healthy worker effect would mean that the real prevalence of injury in the population was underestimated by restriction of the study population to those still at work.

[84]Electrodiagnostic tests measure conduction along the nerve to detect slowing of nerve impulses, which would indicate damage. While the experts agreed that electrodiagnostic testing is the most reliable test, they explained that it is susceptible to error and is as much art as science. The results may vary with room temperature, patient skin, electrode placement, and equipment calibration, and there are differences of opinion within the

(continued...)

use of the Tinel's sign test[85] was "not that bad." (Tr. 10,182). Dr. Silverstein testified that she did not require electrodiagnostic testing because the aim was to find the simplest measures used by clinicians for diagnosis, based on the literature available in 1981-82. She employed other measures including the Tinel's test.

Dr. Nathan, who had extensive experience with electrodiagnostics, testified that CTS can be diagnosed solely on the basis of symptoms and signs "in most instances" without regard to nerve conduction.[86] We also note that the Mayo Clinic study, discussed above, the "gold standard" did not require electrodiagnostic testing.[87] In light of the testimony of Dr. Nathan, and evidence such as the Mayo Clinic study, we conclude that the Silverstein research should not be excluded on the basis of its failure to employ electrodiagnostic testing.

Before leaving the Silverstein study, however, a further issue involves the fit between Dr. Silverstein's research results and the facts here. The Silverstein research found a significant effect when those involved in low repetition/low force jobs were compared to those involved in high repetition/high force jobs. Silverstein acknowledged, "that the data

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[84](...continued)
profession as to the precise measure that would indicate the presence of carpal tunnel syndrome.

[85]The Tinel sign test involves the manipulation of potentially injured areas to test for sensation.

[86]Dr. Hadler also testified that as a clinician he did not always use EMGs [electromyographic tests], but did so where "I think that it's time to do something different."(Tr. 10,180-83). In addition, Dr. Hadler called to our attention his own "Burlington study" where no electrodiagnostic studies were performed. Nortin M. Hadler, M.D., *The Influence of Repetitive Tasks on Hand Structure*, J. Am. Occup. Med. Ass'n 57-63 (Jan. 1981).

[87]The Mayo Clinic study (GX 90) noted that "EMG [electromyographic] confirmation of the clinical diagnosis was helpful but not required for inclusion because more than one-half of the patients with a clinical diagnosis of CTS were not referred to for electrodiagnosis and because EMG may be normal in mild cases."

is less convincing when high repetition work alone [without high force] is involved."[88] (Tr. 10,794). Dr. Silverstein testified, however, that in her opinion the biscuit line jobs were a contributing cause of the employees' CTS, even assuming that all those jobs were "low-force" under the criteria of her studies.[89] (Tr. 10,899-900).

Weighing Dr. Silverstein's testimony, Dr. Hadler's rebuttal testimony, and Stock's analysis, we conclude that the Silverstein study is substantial evidence that repetition causes UEMSDs. In doing so we note that her research does not represent a clear fit with the facts here.

The Nathan study, (*supra*, note 80), was a cross-sectional survey of 471 workers (in the electronics, steel, plastic, and sausage/meat packaging industries) to determine how many had an abnormality of the median nerve. The study found that impaired sensory conduction of the median nerve was common among workers from all of the 27 occupations studied. When the workers were grouped into five groups, "Administrative/clerical" (Class I/very light resistance/low repetition) had a significantly lower proportion of slowing than "Grinder" (Class V/very heavy resistance/high repetition). However, when hands, instead of persons, were examined the only significant inter-class difference was between Class I and Class III (Assembly line/moderate resistance/moderately high repetition). Nathan explained that since Class V included nearly equally vigorous use of both hands, the absence of an

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[88]Pepperidge notes that Mr. Habes, an ergonomist presented by the Secretary, analyzed the Pepperidge Farm jobs as involving low force. However, on review of the record it appears that Habes did not perform an actual analysis of the jobs at Downingtown, but made an assumption based on work done at a meatpacking plant. (*See* Tr. 2665-66, 6777).

[89]Dr. Silverstein testified that the Barnhart study "is a good comparison." (GX 106) That study found that 7 of 13 cases of diagnosed CTS cases at a Seattle medical clinic occurred in grocery checkers, supporting the association of CTS with "excessive workplace tasks involving repetitive motion." Dr. Silverstein also cited Japanese studies (not offered in evidence) that apparently related to Dr. Barnhart's study of highly repetitive jobs in a ski manufacturing plant. She testified that those studies found a four-fold increased risk of CTS in those jobs compared with low-repetition jobs in the same plant.

inconsistency between I and V in both cases was itself an inconsistency because of which he was "unable to establish any consistent association between the occurrence of impaired sensory conduction . . . and occupational class or the level of hand activity." (RX 45 at 169). At the hearing, he explained that the most significant finding was that slowing was associated with aging. If work were a factor, then the dominant hand would slow more with age.

The Nathan study is used affirmatively by both parties. Pepperidge relies on Dr. Nathan's just quoted finding that there was no showing of significant difference among groups when hands were the measure. The Secretary and Stock explain that the Nathan study is evidence of the UEMSD hypothesis because it found a statistically significant difference between the lowest physical stress jobs and the highest when persons were the measure. (*E.g*. Tr. 10,013-14; GX 310 at 93).[90]

In addition, Stock found four "major flaws" in the Nathan study,[91] while none were found in the Silverstein study and two in the Finnish study. Dr. Silverstein also found flaws in the Nathan study because of potential selection bias, failure to describe the categories in quantitative ways and failure to describe how long a person had been on a particular job studied.

The Finnish study which Stock singled out compared the prevalence of UEMSDs among 152 female assembly-line packers in a food production factory with the rate among 133 shop assistants. The latter group served the public in "a big department store chain" and their "movements of hands varied and were nonrepetitive." Tuulikki Luopajarvi, *et al., Prevalence of Tenosynovitis and Other Injuries of the Upper Extremities in Repetitive Work*, 1979 Scan. J. Work Envi. & Health 48-55 (1979) (GX 154). The study concluded that

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[90]We note that Drs. Stock and Nathan also disagree about the interpretation of Nathan's results regarding bilaterial slowing, with Dr. Stock finding statistical significance where Dr. Nathan testified that he does not. (*See* GX 310 at 95-96 and Tr. 9898-9899).

[91]The major flaws were said to lie in nonrespondent bias, confounders, valid exposure measures and the failure of blind assessors.

"assembly-line packers had significantly more, and more severe, disorders in the neck and upper extremities than shop assistants of the same age." Dr. Stock found two major flaws in the study: failure to eliminate all possible confounders and to blind the assessors. Still, she considered it superior in methodology and validity to Dr. Nathan's study.(Stock at 93-94 and Table III).

There are many other epidemiological studies in the record.[92] We have reviewed them and the testimony concerning them.[93] The opposing experts took several approaches to the further studies in the record. First, they touted studies whose results arguably supported their view. Second, they sought to identify biases in studies which might contradict their position. Studies were routinely critiqued because: l) the population selected for study was said to be unrepresentative or too small, 2) potential confounders were not adequately considered, and 3) the sources of basic data were questionable or not apparent -- for example, the composition of the subject population, the way in which putatively hazardous tasks were defined and measured, and the way in which injury was defined and/or diagnosed.[94]

Third, the experts sought to explain how results relied on affirmatively by the opposition actually supported their position. Where the Secretary's witnesses pointed to results that showed injury, Pepperidge's witnesses pointed to seemingly low incidences of

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[92]*E.g.*, Lawrence J. Cannon, M.P.H., *et al., Personal and Occupational Factors Associated with Carpal Tunnel Syndrome*, 23 J. Occup. Med. 255 (April 1981) (GX 108); (2) Leo Hymovich, M.D., and Miriam Lindholm, R.N., *Hand, Wrist, and Forearm Injuries*, 8 J. Occup. Med. 573 (1966) (GX 146); Wendy Margolis, RN, MS, and Jess F. Kraus, M.P.H., Ph.D., *The Prevalence of Carpal Tunnel Syndrome Symptoms in Female Supermarket Checkers*, J. Occup. Med. 953, 954 (Dec. 1987) (GX 110); M. Q. Birkbeck and T. C. Beer, *Occupation in Relation to the Carpal Tunnel Syndrome*, 14 Rheumatology and Rehabilitation 218 (1975) (GX 145); and Schottland, *supra* note 64.

[93]We note that many of them were considered in the Stock analysis, but found wanting on one or more grounds.

[94]Even so, we note that in many cases the claimed limitations were speculative (e.g., the failure of studies to precisely report methods or data) and virtually impossible to assess.

injury. Pepperidge also pointed out that in some studies injury was so reportedly widespread as to confirm Pepperidge's view that reports must represent the reporting of normal aches and pains.[95]

Dr. Silverstein, for the Secretary's part, similarly stated that studies relied on by Dr. Hadler did show a relation between repetition and UEMSDs. Dr. Silverstein also sought to counter negative inferences from two kinds of results. She explained that studies that did not specifically address CTS were therefore not probative on the causes of CTS. She also explained that studies (including her own) which indicated that incidence of UEMSDs declined with years on the job did so because of the healthy worker effect (employees with UEMSD's left the job sooner; healthy workers stayed).

Pepperidge asserts that the scientific articles "end up canceling each other out" -- not without some good reason. Moreover, given the limitations of this record, and the conflicting

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[95]Dr. Hadler identified as "negative studies" those that tended to show no positive relationship between work and injury. Thus, in regard to Cannon's survey of workers at a Pratt and Whitney aircraft facility (GX 108), he noted that the researchers found carpal tunnel syndrome to be present at a lower level than in the Mayo Clinic's study of the general population; similarly in Hymovich's study of 1000 Bunker-Ramo employees (GX 146), and Luopojarvi's study of Finnish assembly line packers (GX 154), he noted that no one was diagnosed as having carpal tunnel. *See, e.g.*, RX 84 at 952 (Hadler, "Cumulative Trauma, Carpal Tunnel Syndrome in the Workplace--Epidemiological and Legal Aspects"). However, in referring to these same reports, Dr. Nathan, on whose work Pepperidge and Dr. Hadler also rely, identified Cannon and Hymovich as "among those who believe that certain occupations cause or aggravate carpal tunnel syndrome." (RX 45 at 167) Dr. Stock, as noted in the text, singled out the Luopajarvi study as supportive of the theory that repetition causes UESMDs.

From another perspective, in regard to a study of postal workers (GX 72), Dr. Hadler observed that both the study and control group had impressive abnormalities; in regard to a study of Oscar Meyer meatpackers (GX 94), he agreed that a high incidence of carpal tunnel was reported, but noted that the comparison group also had a high incidence according to electrodiagnostic studies.

We also note that the Secretary's witnesses touted studies that show high incidence of UEMSDs but discounted the relevance of those that show little or no CTS.

expert opinions discussed above, we conclude that more detailed discussion of the studies in the record would shed more heat than light.

To summarize the epidemiological evidence, while there was no unanimity of opinion in the record, we find Dr. Silverstein's testimony to be the most persuasive. We reach this conclusion both because she actually testified at the hearing (and thus was subject to cross-examination) and because her primary study was identified by the Stock meta-analysis as the most reliable. The evidence presented by Dr. Silverstein supports the existence of a causal connection between the work performed and UEMSDs.

e. Intervention Studies

An important indication of the plausibility of a causal connection is the effect of an intervention to reduce or eliminate exposure to the putative hazard. Dr. Hadler's categories of evidence, consistent with this principle, include studies of "ergonomic interventions."[96] Dr. Hadler testified as to five studies that he identified as ergonomic interventions. As Dr. Silverstein noted, however, two of these studies were not properly characterized as ergonomic interventions.[97] A third study Dr. Hadler relied on was a study by Dr. Silverstein of hand-wrist disorders among investment casting plant workers.[98] That study reported that

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[96]The confines of Dr. Hadler's fifth category of data are not clear. On brief, Pepperidge terms this category "ergonomic intervention and multi variate analysis literature." (Pepperidge Brief at 56). On inspection, it appears that the category contains three studies which, according to Dr. Hadler, showed that recommended ergonomic interventions yielded no benefit, and two studies which considered the potential role of psychosocial context, in addition to task content.

[97]These studies were performed by Ryan and Linton (RX 82 and 83) and found "psychosocial" factors were more closely correlated with complaints of arm pain than repetitive motion tasks. Dr. Silverstein further noted that the Ryan study found statistically significant correlation between CTD complaints and ergonomic factors including training in chair adjustment, sufficiency of rest breaks, the angle of elbow and forward arm, eye copy distance, and the glare from the VDT screens.

[98]Barbara A. Silverstein, *et al., Hand-Wrist Disorders Among Investment Casting Plant*

(continued...)

interventions had not been effective. Dr. Silverstein countered, however, that the interventions did not include reductions in force or repetitiveness.[99]

The other two studies Dr. Hadler cited ("Oxenburgh" and "Greene") are not in the record. Dr. Silverstein testified, however, that the Oxenburgh study actually found that during a 2-year period in which changes were made in an office environment the severity of the CTD problems decreased. Because these two studies were not put into the record, and in light of Dr. Silverstein's testimony, it is difficult to give any weight to them.

We also note Teed-Sparling's testimony on interventions. In response to a cross-examination suggestion that her recommendations did not go far enough, Teed-Sparling testified that "a drastic reduction in repetitive motion injuries" had occurred when similar steps were undertaken at the Pepperidge poultry processing plant in Worthington, Minnesota.[100] (Tr. 3480-81). In light of all the above, we conclude that this record reflects only limited study of the effects of interventions; however, it does include Teed-Sparling's unrebutted testimony that the intervention proposed at Downingtown had been found to work elsewhere.[101]

(...continued)
Workers, 12 J. Hand Surgery 838, 844 (1987) (GX 98).

[99]The interventions in that study involved postural changes.

[100]In a February 1988 memo (GX 27), Teed-Sparling wrote that "[t]here is no easy answer to prevent repetitive motion injuries in repetitive manual tasks. Our experience at [the Pepperidge plant at] Worthington, which agreed with other industry experience, is that the answer is a combination of staged, ongoing long and short term steps."

[101]A 1988 review of intervention research proffered by the Secretary (GX 155) noted:

> Since these [UEMS] disorders were recognized only by a small group of scientists before 1975-80, it is to be expected that the majority of publications are descriptive, *i.e.*, they focus on incidence, prevalence and severity of the disorders . . . .
>
> Many . . . preventive measures are probably attempted in working life, but

(continued...)

f. Biological Plausibility

The biological plausibility of any theory of causation is relevant in assessing that theory. In this regard, Dr. Nathan, in addition to the epidemiological study discussed *supra,* studied the location of slowing in the nerve in the presence of carpal tunnel syndrome.[102] He reported that the slowing occurred most frequently at a distance two to four centimeters from the point where the wrist bends. Dr. Nathan testified that this finding evidenced that bending of the wrist did not cause carpal tunnel, because the slowing, and associated lesion, would be closer to the point where the nerve bends.

Dr. Feldman, who, like Dr. Nathan, had many years of clinical and research experience with UEMSDs, gave testimony in rebuttal to Dr. Nathan. Dr. Feldman did not disagree with Dr. Nathan's finding that the slowing of the median nerve is generally "determined at the distal end of the transverse ligament." However, he questioned the inferences to be drawn from the finding. He explained that while distal wrist crease may serve as a "general landmark," he did not believe the surface crease of the skin would be related predictably to the anatomy within the hand.

We are not in a position to assess the ultimate implication of Dr. Nathan's research. However, as noted *supra*, Dr. Nathan elsewhere agreed that some of the injuries here (DeQuervain's disease and trigger finger) could have been caused by the tasks at Downingtown. Thus, Dr. Nathan, in effect, endorses the biological plausibility of some of the injuries here.

In addition, alternative hypotheses of the biological plausibility of UEMSDs were presented. Stock summarizes them as follows (GX 310 at 88):

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[101](...continued)

> since the effects are not monitored, it is not possible to draw conclusions concerning the most effective methods of prevention.

[102]*See, e.g.*, RX 43 (*Location of Impaired Sensory Conduction of the Median Nerve in Carpal Tunnel Syndrome*).

> It is further hypothesized that rapid, repetitive, and/or forceful movements, particularly if they are associated with high static load or awkward postures, may lead to localized muscle fatigue, with ischemia and metabolic changes that impair muscle enzyme function. The affected muscles and tendons are then more susceptible to microtears and inflammatory changes resulting in pain and impaired function. The inflamed or thickened tendons or tendon sheaths may also compress adjacent peripheral nerves [Chaffin, 1973; Hagberg, 1982, 1984; Feldman et al., 1983].

Similarly, a manual edited by Dr. Putz-Anderson, an ergonomist witness for the Secretary, explains (Ex. GX 168 at 24):

> the more repetitive the task, the more rapid and frequent are the muscle contractions. Muscles required to contract at a high velocity develop less tension than when contracting at a slower rate. Hence, tasks requiring high rates of repetition require more muscle effort, and consequently more time for recovery, than less repetitive tasks. In this manner tasks with high repetition rates can become sources of trauma even when the required forces are minimal and normally safe.

(Footnote omitted). More generally, the record shows that while there is question about the causal role of work activities, with limited exception (notably Dr. Nathan on carpel tunnel) this questioning is not cast in terms of biological implausibility.[103] Thus, with note of Dr. Nathan's research, and his view that some UEMSDs here could be work-related, we find that the evidence of biological plausibility is not inconsistent with the finding of hazard here.

g. A Note on the Australian Experience and Further Evidence

The initial body of data relied on by Dr. Hadler is the "RSI [repetition strain injury] epidemic" that occurred in Australia, during the mid-1980s, as discussed in articles from Australian medical publications, and by Dr. Hadler himself.[104] The epidemic, Dr. Hadler

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[103]Dr. Nathan also agreed that the majority of those who have researched carpal tunnel syndrome believe that work may cause or aggravate it. (Tr. 9937).

[104]*E.g.*, Nortin M. Hadler, M.D., *Industrial Rheumatology: The Australian Experiences With Arm Pain and Backache in the Workplace*, 144 Med. J. Australia 191-95 (1986) (RX 34); Leslie G. Cleland, M.D., *"RSI": A Model of Social Iatrogenesis*, 147 Med. J. Australia 236-

(continued...)

explained, spread to up to 30 percent of the "high tech" workforces in the states of New South Wales and Victoria, and then abated. In retrospect, Dr. Hadler testified, it did so in the absence of pathologically demonstrable ills (often in the seeming absence of effort at competent diagnoses). The epidemic evidently yielded few instances of actual CTS; Dr. Hadler and Pepperidge therefore cite it as evidence that carpal tunnel is not work-related. (*E.g.*, Tr. 10,195-96). Dr. Hadler stated that the epidemic shows that workplace outbreaks of UEMSDs result largely from psychosocial factors. In the Australian case, the possible psychosocial factors included extensive publicity, warnings about arm pain from Australian medical and official sources, labor-management relations, and other elements of the work environment.

Pepperidge Farm argues that the Australia experience "is startlingly similar to the recent American experience with CTD, and the findings reviewed by Dr. Hadler provide tremendous insight into the causation of this phenomenon."[105] However, the Australian

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[104](...continued)
39 (1987) (RX 39); David A. Ferguson, M.D., *"RSI": Putting the Epidemic to Rest*, 147 Med. J. Australia 213-14 (1987) (RX 40); Bruce Hocking, D.P.H., *Epidemiological Aspects of "Repetition Strain Iinjury" in Telecom Australia*, 147 Med. J. Australia 218-22 (1987) (RX 41).

[105]Dr. Hadler further referred to his unpublished study of alleged UEMSD cases among telephone operators at a number of U. S. West telecommunications facilities. (RX 85) His study found that regardless of ergonomic conditions, there was "extraordinary variability in the complaint rate and extraordinary variability of cross-settings in the ability of the doctors to make a diagnosis of entrapment neuropathy and the willingness of the doctors in the different cities to operate on those wrists."

Dr. Silverstein testified, however, that that study, which resulted from liability suits in which Dr. Hadler agreed to provide expert testimony for the company, had distinct limitations. It compared two different facilities without analyzing all the significant factors that might have been different at those two facilities, such as differences in the pace of work and number of repetitive motions the employees did. Also, the study relied on the OSHA 200 logs of injuries and illnesses kept by those facilities. She testified that reliance solely on OSHA 200 logs is a limitation because the manner of filling out those logs may differ from facility to facility even within the same company. Thus, she testified that the U. S. West study does not
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experience involved reports of injury that were not verified by medical experts, and did not involve carpal tunnel injury.[106] The facts here show many instances of diagnosed CTS.

Similarly, the psychosocial factors that were identified in Australia do not appear to figure here. Thus, an article by the Australian physician Hocking (RX 41) reports "neurosis" to be high among those afflicted in one group, and reports the "psychosocial environment in the telephone area was poor." Thus, a further article refers to "the intrusion of irrational beliefs arising out of perennial group hostilities" (unions and management). Pepperidge does not claim the presence of factors such as a high incidence of neurosis or irrational beliefs among its workers, much less poor psychosocial environment.

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[105](...continued)
support the argument that there is no relationship between work activities and CTS.

The US West experience appears to contain: 1) little or no diagnostic documentation of injury; 2) office workers, and not assembly line workers; 3) few or no claims of CTS; and 4) evidence of an inverse relation between repetition and reported injury. Accordingly, in all four respects, the experience differs from the facts here (although the fourth factor may be evidence to contradict the "CTD hypothesis").

Dr. Hadler also testified on the subject of biological plausibility, referring to his own experience in the Burlington study (RX 35), which addressed the structure and function of the hands of three groups of workers who did different, highly repetitive jobs in a textile mill. Dr. Hadler testified, "we detected none of the sequelae [after effects] of carpal tunnel, although we did not do electrodiagnostic studies." (Tr. 10,220). However, in an article describing the Burlington study, Dr. Hadler made clear that it "was not designed to test for abnormality." (RX 35).

[106]Thus, RX 62 A, an op.ed. article in evidence, published in the Medical Journal of Australia, explains that "RSI lacked a clear clinical definition or credible pathogenesis, its course was contrary to experience with other illnesses, its signs were conspicuous by their absence and examination revealed no clinical abnormalities." David S. Bell, "*Repetition Strain Injury": An Iatrogenic Epidemic of Simulated Injury*, 151 Med. J. Australia 280 (1989) (RX 62A).

Similarly, in putting forth the theory of "social iatrogenesis" (RX 39) another author (Cleland) explains his discussion "relates to the term 'RSI' as used to refer to chronic upper limb pain and associated disability in the absence of evident injury." Here, by contrast, there was evident injury. Cleland, *supra* note 104 at 236.

The Australian experience, the Secretary notes, also involved high tech and office workers, not assembly line workers. This distinction is significant but less compelling. The Secretary's theory that UEMSDs are a function of repetition is not limited to assembly lines. In any event, the articles purporting to address the Australian experience do not rule out repetition as a causal factor.[107] They may highlight psychosocial factors referred to by Dr. Hadler, but they indicate that research is far from definitive, and that repetition may be one among several factors.

Conclusion as to Causation

In summary, we note first that there is evidence of substantial injury here, particularly carpal tunnel syndrome at Downingtown. This evidence includes findings by doctors, nurses and technicians and actions, including many instances of surgery, based on these findings. Further, the testimony of Pepperidge medical personnel and the records relating to the diagnosis and treatment provided by them and outside medical personnel illustrate their views that the injuries here were caused by the work at Downingtown.

Additionally, the testimony of the clinicians here supports the proposition that at least some of the UEMSDs were caused by the work. This includes not only the testimony of both the Secretary's experts (Drs. Harrison and Feldman), but also Dr. Nathan's testimony that some of the injuries could have been caused by the job tasks at Downingtown. Moreover, Dr.

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[107]Thus, a survey relied on by Dr. Hadler to show the role of psychosocial factors, postulates "a multifactorial aetiology in which posture, work organization and work social climate are all implicated." (RX 82). Similarly, a series in the Medical Journal of Australia notes that "no general explanation on the basis of either hysteria or social iatrogenesis accounts for the heterogeneity that was observed: many syndromes, rather than one only, are present . . . . Almost no research has been carried out to quantify putative factors and their interaction, or to evaluate interventional strategies." (RX 40). Similarly, Hocking (RX 41) explains that the "psychosocial" theory does not provide a full explanation for the Australian phenomenon:

> Various interventions to control the epidemic were tried, including education about posture and the recognition and early reporting of symptoms, training in keyboard skills, the provision of ergonomic furniture, job redesign to include alternate duties, and exercise breaks . . . . It is not certain if any or all of these interventions contributed to the large and general decline.

Hadler's hypothesis that UEMSDs cannot be caused by customary and comfortable action does not contradict this conclusion since there is ample testimony by those on the scene that the tasks at issue were not comfortable. Similarly, Dr. Hadler's view that many workplace related UEMSD endemics are a function of psychosocial stimulation of soft tissue complaints does not fit this case, where many instances of carpal tunnel syndrome were diagnosed.

Significantly, the incidence of carpal tunnel injury at Downingtown is substantially in excess of that found in other populations, including other populations of workers. While Pepperidge points out, and it is undisputed, that many factors other than work may cause carpal tunnel, there is nothing that has been pointed to in the record to indicate that these factors were present at Downingtown in sufficiently disproportionate measure to explain the high incidence at Downingtown.

The UEMSD hypothesis is further supported by the sole epidemiologist who testified here and by the most comprehensive review of these studies contained in the hearing record. The experts here also agreed that needed research remains to be performed. Research on the effect of interventions is limited. However, Teed-Sparling did testify without contradiction that the efforts Pepperidge undertook elsewhere had, in fact, worked.

Finally, the testimony of the medical experts, noted above, as to the potential causal connection of repetition and some UEMSDs supports the biological plausibility of this hypothesis, as does the evidence on muscle biomechanics. Dr. Nathan did testify that his research indicates that the location of nerve damage contradicts the hypothesis. However, Dr. Nathan also testified that some of the injuries here may have been caused by the work at Downingtown.

We therefore conclude that the Secretary has established on this record a causal connection between UEMSDs, including CTS, affecting the employees at Downingtown and their work on the biscuit lines. In doing so, we are mindful that many of these injuries may have had more than one causal factor and of the experts who contend that the specific cause of such injuries is, essentially, unknowable or presently unknown. As is the case with many

other occupational ills with multiple possible causes, employees are more or less susceptible to injury on the job because of the individual attributes and backgrounds they bring to the workplace. As with these other ills, the Secretary is not thus foreclosed from attempting to eliminate or significantly reduce the hazard by regulating what is shown to be a substantial contributing factor to the worker injuries. We find based on all of the evidence set forth above that the Secretary has made such a showing here.

We further reject the contention that the cause of these injuries is unknown or is not, in part, the jobs at issue. We find particularly persuasive the evidence contributed by the clinicians who actually examined Pepperidge's Downingtown employees and their medical records, and the support provided by the incidence rate comparisons and the key clinical and epidemiological evidence set forth above.[108]

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[108]In dissent, Commissioner Montoya questions the reliability and admissibility of ergonomics testimony. She overlooks, however, the fact that the essential testimony and evidence on which we base our finding of hazard here was provided by expert witnesses who are medical doctors, researchers, and, in one case, an epidemiologist, as well as on the testimony of additional medical practitioners who diagnosed and treated the injuries at Downingtown. Commissioner Montoya does not question the admissibility of this testimony or our reliance on it. Moreover, unlike the ergonomics testimony rejected by the court in *Reiff v. Convergent Technologies*, No. 95-3575 (D.N.J. Feb, 28, 1997), the ergonomists and further witnesses who testified here (for both Pepperidge Farm and the Secretary) did analyze the workers' job activities and considered non-work factors that could have caused the injuries.

In a similar vein, Pepperidge Farm in its supplemental brief cites the Supreme Court's decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), in support of the proposition that the Secretary's expert testimony should be struck. In *Daubert*, the Court set forth several factors that impact on the reliability of expert scientific testimony offered for admission: whether the theory or technique can be tested; whether it has been subject to peer review and published; the known or potential error rate; and the degree of acceptance within the relevant scientific community. As stated above, and bearing these factors in mind, we concur with the judge's findings on the admissibility of the expert scientific evidence in the record.

The circumstances in this case may be usefully compared with those in cases noted by our dissenting colleague, in which proffers of expert testimony have been rejected. Thus, in

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F. Recognition of the Hazards

The evidence of record in this case fully supports a finding that Pepperidge recognized the hazards alleged in this item. We summarize the evidence that supports this finding below. We must determine, however, whether it is appropriate to find recognition if Pepperidge's knowledge of the hazards was obtained, in part, through its own efforts toward achieving a safe workplace.

Turning first to the question of knowledge, we note that there is ample evidence that Pepperidge Farm was aware of both actual injury to employees and its causal connection to the workplace. That evidence includes records kept by Pepperidge's own medical department. Additionally, Dr. Snyder, Pepperidge's plant physician, testified that the cupping and capping jobs put the employees at increased risk of developing UEMSDs. Further, Pepperidge's chief nurse at the plant, Carol Moore, testified that "at our biscuit plant when they cupped cookies, that could give you tendinitis, especially if they were doing it either too fast or dropping the cups too fast or something." The physicians whom Pepperidge itself retained to examine and treat the 68 employees with UEMSDs generally concluded that those

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[108](...continued)
Reiff, the experts did not address matters that were addressed by the experts here. Similarly, in *Dukes v. Illinois Central Railroad Co*., 934 F. Supp 939 (N.D. Ill. 1996), which involved a railway workers' claim for CTS-related disability under the Federal Employers' Liability Act, the court rejected the plaintiff's proffer of a neurosurgeon. The court found that the witness had "not performed any independent studies, nor has he reviewed any research for purposes of reaching his opinion." *Id*. at 948. The court found that the expert "articulated no technique or methodology by which his conclusions can be scientifically and objectively tested or subjected to peer review." *Id.* at 949.

In this case, the medical experts all had substantial clinical experience with UEMSDs, all had performed some research, and, with the exception of Dr. Harrison, had produced peer review papers relating to the issues of this case. Dr. Silverstein had similarly performed peer review epidemiological research on UEMSDs. The two ergonomists had substantial practical experience and, in the case of Dr. Putz-Anderson, edited a manual for general and broad distribution on UEMSDs.

conditions were causally connected to their jobs and were the precipitating factor in the employees' disablement.

Evidence of Pepperidge's knowledge of the hazards further includes the reports submitted by Jane Teed-Sparling, the ergonomist for Pepperidge's parent company, Campbell Soup Co. She reported, following an investigation, that a causal connection between the biscuit line jobs at Downingtown (and other Pepperidge biscuit plants) and UEMSDs. She informed Pepperidge executives of her findings in her reports on the Downingtown and other plants.

Significantly, Teed-Sparling announced a company-wide UEMSD reduction program in a memorandum of Nov. 4, 1986. It was distributed to Campbell's then-Vice President for Human Development and Training, Larry Suchoweloc; Pepperidge's corporate Vice President for Human Resources, Dennis Dougherty; Campbell's Corporate Director of Safety, Frederick Wahl; and Pepperidge's Corporate Manager of Human Resources, Steve Larson, among others. (GX 174). Teed-Sparling attached to that memorandum her ergonomic evaluation report on Pepperidge's Richmond, Utah plant. In the Richmond report, she stated:

> The ergonomic objective in this study is to eliminate *documented harmful postures leading to carpal tunnel*, thoracic outlet and cervical complaints. *Prevention of carpal tunnel syndrome is accomplished through the elimination of the following postures:* wrist flexion, wrist extension, ulnar deviation of the wrist, radial deviation of the wrist, pinching with the second and third digits, thumb abduction, pinching of the palm while grasping a sharp tool or object, static loading of the arm muscles and exposure to low frequency vibration (10-40 Hz).

(*Id.* at 3). (Emphasis added).

Teed-Sparling's 1987 ergonomic audit of the Downingtown plant also showed recognition of work-related causes of UEMSDs there. "Due to the highly repetitive nature of manual work involved in production and packaging in the biscuit operation, *emphasis was placed on the identification of high risk tasks associated with repetitive motion injuries* and prevention through ergonomic redesign." (GX 39 at 1). "*The objective of this study is to eliminate harmful postures*, documented from ergonomic research, *leading to repetitive*

motion injuries of the upper extremities." (*Id*. at 3). Teed-Sparling listed factors such as wrist flexion, wrist extension, ulnar and radial deviation of the wrist, pinching with the second and third digits, and other movements as "harmful postures and movements that ergonomics strives to eliminate." She pointed to specific aspects of Downingtown jobs that she felt contributed to UEMSDs, including:

> (1) **capping** employees worked at excessive work heights and thus "must assume wrist flexion and wrist extension postures which are leading contributors to carpal tunnel syndrome")
>
> (2) **cupping** -- "Several areas of concern were witnessed in the cupping operation associated with potential repetitive motion injures [sic]. . . . Harmful postures include repetitive rotation of the hand in cupping, pinching of the cookies in pickup, pinching and thumb abduction in cup dropping and static loading of the pickup arm."
>
> (3) **institutional Goldfish case packing** -- "Accident history has documented that [this job] is excessive and leaves operators prone to tendinitis."

Teed-Sparling's reports evaluating Pepperidge Farm biscuit plants in Richmond, Utah, and Lakeland, Florida, contained comparable statements about the jobs there. Also, Campbell Soup's "Manual of Ergonomics Applications" dated March 19, 1986 and prepared by Teed-Sparling, stated "*continuous repetitive motions of the wrist can result in* breakdown of lubrication in the tendon sheaths, *tenosynovitis, and left untreated can lead to tendinitis and carpal tunnel syndrome*."(GX 184 part 2 at 20). (Emphasis added). Accordingly, we find that the record fully supports a finding that Pepperidge recognized the hazards alleged here.

Here, as with the lifting items, Pepperidge contends that to find recognition based on its voluntary efforts to improve safety at its workplace is impermissible. However, again, Commission and court precedent is clear that under section 5(a)(1), "precautions taken by an employer can be used to establish recognition [of hazards] *in conjunction with other*

evidence." *E.g., Waldon*, 16 BNA OSHC at 1061, 1993-95 CCH OSHD at p. 41,154-55 (emphasis added).[109]

Again, as with the lifting items, there is independent evidence of recognition. As mentioned, Pepperidge Farm's own medical records show that 68 employees were afflicted with work-related UEMSDs, and its medical personnel specifically indicated that many of those ailments were actually caused by the biscuit line jobs. The testimony of Dr. Snyder and chief nurse Moore linking UEMSDs to those jobs is further independent evidence of Pepperidge's recognition. Teed-Sparling's reports are just one more clear indication that Pepperidge recognized the hazards. Thus, reliance on those reports is appropriate under our precedent.

In the cases relied on by Pepperidge, the Commission held, in effect, that it would not presume from safety measures taken by an employer that it recognized a hazard under section 5(a)(1). In contrast, in the instant case, we do not need to rely on any ameliorative efforts

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[109]Pepperidge cites a statement the Commission recently made when declining to rely on evidence that an employer *failed to take precautions* after being warned of hazards and instead finding willfulness on other grounds. The Commission stated:

> [W]e recognize that penalizing employers for their response (or lack thereof) to their own consultant's warnings might discourage employers from creating and developing their own safety programs. Consequently, we will ascribe neither credit nor blame for the results of Falcon's self-audits. *See General Motors Corp., GM Parts Div.*, 11 BNA OSHC 2062, 2066, 1984-85 CCH OSHD ¶ 26,961, p. 34,611 (No. 78-1443, 1984) aff'd 764 F.2d 32 (1st Cir. 1985) . . . .

Falcon Steel Co., 16 BNA OSHC 1179, 1182, 11993-95 CCH OSHD ¶ 30,059, p. 41,333 (No. 89-2883, 1993) (consolidated). Clearly, that statement was dicta, rather than the Commission's holding. *Cf. Morrison-Knudsen Co./Yonkers Contr. Co., A Joint Venture*, 16 BNA OSHC 1105, 1127, 1993-95 CCH OSHD ¶ 30,048, p. 41,285 (No. 88-572, 1993) (section 5(a)(1) case citing *Trinity Indus.*, 15 BNA OSHC 1481, 1485 n.8, 1992 CCH OSHD ¶ 29,582, p. 40,035 n.8 (No. 88-2691, 1992)), which involved broadly worded standard). In any event, as noted above, the evidence of recognition here comes from multiple sources beyond the warnings of Teed-Sparling.

Pepperidge undertook pursuant to Teed-Sparling's recommendations. Rather, the evidence in support of recognition consists not of safety measures but of actual and specific knowledge of the hazards imparted to Pepperidge in the normal course of business by its own medical staff, its workmen's compensation insurer and by its parent's corporate ergonomist. Hence, we do not believe it would be unjust to rely on this knowledge in finding recognition, nor do we feel it would discourage employers from trying to improve safety in the workplace. Moreover, to the extent that the information Pepperidge obtained from Teed-Sparling, the ergonomist, might be considered above and beyond the normal course of business, we still find it may appropriately be relied on in finding recognition because, unlike the cases relied on by Pepperidge, our finding of recognition is by no means based solely on this evidence.

G. Serious Physical Harm

Section 5(a)(1) requires the employer to abate only those recognized hazards "that are causing or are likely to cause death or serious physical harm to his employees." We find that at least some of the UEMSDs here constitute "serious physical harm."

The judge found that "the repetitive work contributed to the incapacitation of the employees with UEMSDs up to and including carpal tunnel syndrome which required an operative procedure. Certainly an operative procedure comes within the purview of serious injury." He observed that "an employee who cannot perform his job because of the pain and suffering attendant to certain types of movement that exacerbate the condition, is suffering from injury that renders the employee unemployable whether or not pathologic change is present."

Pepperidge relies on Dr. Hadler's testimony that the symptoms complained of here, consisting of "pain alone without pathoanatomical change or pathoanatomical damage to the body," do not lead to serious physical harm. Pepperidge characterizes conditions such as tendinitis and tennis elbow as nonserious, similar to the "bumps, bruises, corns and blisters which permeate life (at home and at work) in the real world." Dr. Nathan testified that

"people experience discomfort routinely in their lives, and discomfort is not necessarily disease." However, Dr. Hadler further testified that *if* Pepperidge employees suffered one of the entrapment neuropathies, such as CTS, that "would qualify as a damaging outcome." (Tr. 10,319). While Dr. Hadler, as discussed, did not view the injuries here to include CTS, we have found that they did.

The Commission has considered an effect on the body to be "serious physical harm" even where there was no showing of "pathoanatomical change or damage" (to use Dr. Hadler's term). In *GAF Corp.*, 9 BNA OSHC 1451, 1981 CCH OSHD ¶ 25,281 (No. 77-1811, 1981), the Commission majority found that argyria, a permanent discoloration of eyes and skin due to exposure to airborne silver, was serious physical harm. It indicated no disagreement with the dissenting Commissioner's statement that argyria involves no "damage to tissue or impairment of body function." *Id*. at 1459, 1981 CCH OSHD at p. 31,248.

> [W]e are struck by the clearly grotesque darkening of the conjunctiva of the workers' eyes and the sharp and unmistakably bluish hue of at least one worker's complexion. We reject the notion that a worker's substantial sacrifice of his or her appearance is anything less than serious.

Id. at 1457, 1981 CCH OSHD at p. 31,246. The Commission has characterized hearing loss as serious physical harm, even though it may not cause pain or disability from working. *Miniature Nut and Screw Corp.*, 17 BNA OSHC 1557, 1559, 1996 CCH OSHD ¶ 30,986, p. 43,175 (No. 93-2535, 1996).

There are nonserious UEMSDs. However, physical disorders that so adversely affect employees that they are disabled from doing their jobs are serious physical harm in our view -- even if the disability is not permanent. Pepperidge's medical records show that about half of the 68 employees at issue became disabled from performing their regular jobs. Many were placed on disability and others were given restricted work. At least 33 employees were diagnosed with CTS, of which 16 underwent carpal tunnel release surgery (10 of them had more than one surgery). Those employees missed several weeks or months of work while recuperating. Employees with trigger finger and ganglion cysts also underwent surgery and

lost time from work. All those UEMSDs clearly involved serious physical harm to the employees. In light of all of the above, we conclude that the hazards at issue were likely to cause serious physical harm to employees.

H. Feasibility of Abatement

1. Introduction

As discussed, in order to prove a violation of section 5(a)(1), the Secretary also must show that feasible means exist to eliminate or materially reduce the hazards. The required showing was described in *National Realty & Constr. Co. v. OSHRC*, 489 F. 2d 1257 (D.C. Cir. 1973):

> Though resistant to precise definition, the criterion of preventability draws content from the informed judgment of safety experts. Hazardous conduct is not preventable if it is so idiosyncratic and implausible in motive or means that conscientious experts, familiar with the industry, would not take it into account in prescribing a safety program. Nor is misconduct preventable if its elimination would require methods of hiring, training, monitoring, or sanctioning workers which are either so untested or so expensive that safety experts would substantially concur in thinking the methods unfeasible. All preventable forms and instances of hazardous conduct must, however, be entirely excluded from the workplace . . . . The record must additionally indicate that demonstrably feasible measures would have materially reduced the likelihood that such misconduct would have occurred.

Id. at 1266-67 (footnote omitted). Though *National Realty* addressed hazardous employee conduct, the same principles apply to all workplace hazards. This formulation, however, does not require that the abatement method take any particular form, only that it effectively abate the hazard at issue.[110]

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[110]*Cf. Brown & Root, Inc.,* 8 OSHC 2140, 2144, 1980 CCH OSHD ¶ 24,853, p. 30,656 (No. 76-1296, 1980), in which the Commission stated:

> Section 5(a)(1) requires the employer to free its workplace of recognized hazards. The Act, however, does not specify the manner by which recognized hazards are to be removed from the worksite. Accordingly, the employer may use any method that renders its worksite free of the hazard and is not limited

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Judge Oringer held that the measures the Secretary proposes to abate these hazards would require an "experiment," which he held cannot be required under section 5(a)(1). He found that the means of abatement put forth by the Secretary were unproven and would have required trial and error to determine whether they would materially reduce the hazard and, if so, at what level. The judge agreed with the Secretary that Pepperidge did not do enough --- "a more compassionate employer would have experimented along the lines the Secretary discusses." However, he concluded that "to force an employer to experiment in order to bring about abatement requires a standard. Under section 5(a)(1) an employer cannot be forced to experiment."

On review, the Secretary argues that Pepperidge Farm failed to act on the recommendations made by their ergonomist (Teed-Sparling), and further failed to undertake sufficient measures to reduce repetitive motions such as those called for by the Secretary's ergonomists. The Secretary views these failures as broad and clear, stating that Pepperidge Farm "largely ignored the problem, and [by the time of the inspection] had implemented few real changes . . . ."

Pepperidge Farm counters that it acted to address the hazard by calling on Teed-Sparling and authorizing her to review conditions and make and pursue recommendations. It says its conduct should be rewarded and not penalized. It argues that, contrary to the Secretary's claim, it did act to reduce repetitive motions, and further that there is no known or agreed upon threshold for risk and therefore the Secretary has not shown what abatement measures would materially reduce the hazard.

For the reasons set forth below, we affirm the judge's dismissal of this item of the citation.

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[110](...continued)
to those methods suggested by the Secretary.

2. The Nature of the Secretary's Burden

Pepperidge Farm argues that the means of abating the hazard here are so uncertain that they cannot be found to be feasible and likely to materially reduce the hazard. No one, Pepperidge Farm points out, testified as to when repetitive motion becomes a hazard or how much Pepperidge Farm would have had to reduce its employees' repetitive motions in order to alleviate the hazard. Indeed, Pepperidge Farm further points out, and the Secretary's experts agree, that non-workplace factors may cause or contribute to the illnesses at issue, and that individuals differ in their susceptibility to potential causal factors. Moreover, Pepperidge Farm notes that the Secretary's expert, Dr. Silverstein testified before Congress in 1989 that there was no "consensus" as to a good ergonomics program. Under these circumstances, Pepperidge Farm declares, "employers are placed in an untenable position."

As we have held above, the Secretary has met her burden of proving that the injuries here at issue were substantially related to the workplace. Moreover, while the cause of these injuries is multifactorial and may involve non-work factors, experts for both Pepperidge and the Secretary agreed that repetition and posture are among the work-related causal factors. As further stated above, we concur with Pepperidge that the Secretary has not established the level at which the hazard commences or to what extent the work-related causal factors must be varied to eliminate the hazard. However, where injury is present and sufficient causation has been shown neither precedent nor common sense require that abatement action be postponed until there is determination of the threshold at which injury occurs, or the level at which safety can be assured.

We agree that the Secretary seeks to require Pepperidge to follow a process of abatement rather than to implement a single specific abatement measure. The Secretary herself describes a process approach stating that she would allow Pepperidge "to discover -- through the adoption and evaluation of the many suggested means of abatement -- precisely what particular mix of engineering and administrative controls most efficiently reduces the

severe CTD problem at Downingtown."[111] The question we now turn to is thus whether it is appropriate to require Pepperidge to embark on a process where different abatement means must be tried and evaluated in order to achieve abatement.[112]

In fact, as the record makes clear, Pepperidge did engage in a process approach to addressing the injuries at the Downingtown plant. Both Pepperidge's actions and the Secretary's requested abatement indicate that such an approach to abatement is appropriate in this instance. In the final analysis, the record shows that the underlying disagreement between the Secretary and Pepperidge Farm is not whether a process is a reasonable response to the ergonomic hazard here, but whether the process engaged in by Pepperidge was adequate given the state of knowledge regarding these hazards at the time of the citation. The record helps to define what the requirements of such an abatement process might be. First, the record shows that there are core components of the process - accurate record keeping,[113] medical treatment for injured employees, workplace analysis to assess the potential hazard and steps to abate it, education and training of workers and management, and further actions, to the extent feasible, to materially reduce the hazard. Second, the record shows that there may be choices among a menu of alternatives for some of these components. Finally, as

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[111]At oral argument, counsel for the Secretary objected to the use of the term "experiment" to describe this process of abatement stating that "the recommended abatement measures is [sic] not an experimentation because they do not require the development of new technologies . . . [or] the application of existing technologies." (Oral argument Tr. 16).

[112]The distinction between the terms "experiment" and "process" may seem to be a distinction without a difference. We prefer the term "process," however, because experimentation may be read to imply the application of abatement methods the efficacy of which have not been established. As discussed below, we would not require employers to adopt abatement methods without some showing of their efficacy.

[113] We note that the Secretary does not contend that the deficiencies in Pepperidge's record keeping rendered its abatement process inadequate.

implied in the concept of process and choice, an abatement process likely involves an incremental approach.[114]

We conclude based on the entire record that here, where actual injury is present and substantial causation has been shown, the Secretary may require Pepperidge to engage in an abatement process, the goal of which is to determine what action or combination of actions will eliminate or materially reduce the hazard.[115]

The question remains, however, what standard of proof the Secretary must meet in order to establish that the abatement process that Pepperidge did engage in was inadequate. Commission and judicial precedent suggest various means of establishing the efficacy of a proposed means of abatement. Thus, for example, as the Secretary points out, in previous cases sufficient evidence of efficacy has been found based on: successful use of a similar

[114]Incrementalism implies a premium on evaluation of the consequences of initial actions which have been undertaken. Incrementalism also suggests (but does not require) that some steps may await the completion of others, and admits that actions may not have the desired results. (We note that the Secretary's argument that Pepperidge Farm's actions were insufficient, and Pepperidge Farm's argument to the contrary, cannot be evaluated based on the longer term effects of Pepperidge's actions because the record does not contain data on post-inspection injuries at Downingtown.)

[115]We recognize that in some cases of ergonomic hazard a process approach to abatement may not be necessary because a single means of abatement might be appropriate.

approach elsewhere,[116] industry standards and testimony by experts in the industry[117] and expert testimony that the technology proposed by the Secretary had been on the market for a number of years and would materially reduce the hazard.[118] Similarly, the Secretary explains that in *Boise Cascade Corp*. v. *Secretary of Labor*, 694 F.2d 584, 590 (9th Cir. 1982) an appropriate showing was found to be that the proposed "controls have been [used effectively] on the same or similar equipment by others in the industry."[119] (Secretary Brief at 102). The Secretary, therefore, is asking Pepperidge to take only actions that are supported by empirical evidence of effectiveness in some form in another setting or equivalent expert

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[116] *Continental Oil Company v. OSHRC*, 630 F.2d 446, 449 (6th Cir. 1980), *cert. denied*, 450 U.S. 965 (1981) (cited by the Secretary, Secretary Brief at 99, in arguing that she can establish feasibility by "evidence tending to show that other employers in the industry employed the types of safety measures advocated by the Secretary, combined with recognition by experts of the 'safety utility' of these control measures."). *See also Pratt & Whitney Aircraft, Div. of United Technologies Corp.,* 8 BNA OSHC 1329, 1335, 1980 CCH OSHD ¶ 24,447, p. 29,825 (No. 13591, 1980), *vacated in part on other grounds,* 649 F.2d 96 (2d Cir. 1981); *Wheeling-Pittsburgh Steel Corp.*, 10 BNA OSHC 1242, 1246, 1981 CCH OSHD ¶ 25,801, p. 32,244 (No. 76-4807, 1981) (consolidated).

[117] *General Dynamics Land Systems Div*. *Inc*., 15 BNA OSHC 1275, 1286, 1991-93 CCH OSHD ¶ 29,467, p. 39,756 (No. 83-1293, 1991), *off'd without published opinion*, 985 F.2d 560 (6th Cir. 1993) (Secretary Brief at 102).

[118] *Tampa Shipyards, Inc.*, 15 BNA OSHC at 1536 (Secretary Brief at 100).

[119] The Secretary, however, is not required to show that the industry has adopted the measures she is proposing. As the court held in *National Realty*, "[t]his is not to say that a safety precaution must find general usage in an industry before its absence gives rise to a general duty clause violation. The question is whether a precaution is recognized by safety experts as feasible, not whether the precaution's use has become customary." 489 F.2d at 1266 n.37.

testimony.[120] Thus the burden of proof that the Secretary herself proposes is consistent with established precedent on abatement.

Accordingly, the essential disagreement in this case does not relate to the nature of the Secretary's burden or the identification of core components of the abatement process. Rather, the parties disagree on the extent to which Pepperidge actually implemented particular actions, and the extent to which it was obliged to pursue additional actions that would reduce repetitions. For the reasons stated below, we find that the Secretary failed to meet her burden to demonstrate that: 1) Pepperidge failed to undertake the requisite abatement process, or 2) the specific actions allegedly not undertaken by Pepperidge were feasible and likely to materially reduce the hazard.

3. Actions Taken By Pepperidge

The Secretary asserts that Pepperidge failed to follow most of the Teed-Sparling recommendations. The Secretary argues that Pepperidge "refused, in the face of consistent warnings from its professional ergonomist . . . to take the first step to reduce the rate of CTDs at its plant." The Secretary also argues, somewhat inconsistently, that Teed-Sparling's recommendations fundamentally failed to consider actions to reduce repetitions, and

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[120]Thus, to the extent that the Secretary is seeking what might be called a form of experimentation, it lies in the need to adjust to Downingtown means that in some form have proved efficacious elsewhere or that meet equivalent standards of verification.

Commissioner Guttman notes that while many potential remedies to ergonomics hazards have common sense appeal, they may carry risks as well as benefits. The ergonomics manual edited by Dr. Putz-Anderson explains that there is "a risk that a proposed ergonomic solution, like any therapeutic regimen, may have a side effect that outweighs the proposed benefit." For example, rotation, to take one alternative at issue here, "may pose an increased hazard of injury . . . a worker may lack experience with the rotated jobs and suffer what is called **response interference**" (emphasis in original). (GX 168 at 83-86). Thus, while the risks of many actions may be outweighed by the likely benefits, a blanket presumption that all actions that can feasibly be taken should be taken (because there is a minimal health or safety risk), is, according to the record, unjustified.

Pepperidge consequently failed to take actions to reduce worker repetitions, including specific actions proposed by the Secretary's experts.

We find that the Secretary's characterization of Pepperidge's response to Teed-Sparling's recommendations is inaccurate. Pepperidge did take actions based on Teed-Sparling's recommendations. Further, Teed-Sparling did recommend some actions to reduce repetition, and Pepperidge took action on these recommendations.[121]

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[121]We note that, while we find Pepperidge did take actions aimed at reducing the hazard at its Downingtown plant, plausible testimony in the record indicates it did so grudgingly and that its evaluation of potential actions was constrained by factors other than worker health or safety.

Commissioner Guttman notes that while repetition was considered in fact by Pepperidge Farm's analysis, and to some degree acted upon by the company, the record shows that Teed-Sparling's consideration of repetition was not unfettered.

Commissioner Guttman further notes that, on brief to us, Pepperidge Farm stated that Teed-Sparling did not consider repetition because there was no threshold known by experts, and that she could not impose her own views. This is correct insofar as it goes. Teed-Sparling testified that her best understanding was that there was no known threshold, and that, in the absence of expert understanding it would have been "unprofessional . . . to draw a number of my own . . . without having an established hallmark through ergonomic research." (Tr. 3476). But she further explained that "I was a company employee . . . that would have been political suicide for me to mess with the speed or operations; to mess with how many cookies you're getting out of the plant . . . if there was a hallmark there, yes I would have addressed it." (Tr. 3478). When a hazard sufficient to warrant the attention of health and safety experts is present, restrictions (not related to health and safety) on the analysis that experts can undertake, and the alternatives they may recommend, require attention. If the restrictions are basic, they may amount to a failure to take any action, or, worse, the appearance of remedial action in its absence. I am troubled by the evidence of restriction here. However, the further record in this case of first impression indicates that it merits discussion rather than sanction.

First, as noted above, there is also testimony by Teed-Sparling, which the Secretary did not challenge, that the measures she recommended had been shown to work elsewhere. Second, the record indicates that neither party was eager to address the appropriate role of the potential economic consequences of abatement in the abatement decision making process. Indeed, where the Secretary has urged that actions (*e.g.*, line slowdown) be taken without any clear indication of the stopping point, the question of the role of economic considerations

(continued...)

a. Teed-Sparling's Recommendations

Teed-Sparling prepared her first memorandum summarizing her "ergonomic audit" of the Downingtown plant and providing recommendations for action in April 1987. (GX 39). In February 1988, she returned to Downingtown to review progress and make further recommendations. In a February 10 memorandum to Biscuit Operations Manager Michael Jackson, she wrote that "I am available for further assistance when you are ready to take serious action towards prevention." (GX 27 at 2). In late February she prepared a memorandum for Campbell Soup's Vice President of Human Development and Training that identified limited progress on the actions recommended in April 1987. (GX 179). In her 1990 testimony in this case, Teed-Sparling reiterated, as her contemporaneous memoranda show, that she had been greatly disappointed by the lack of progress made.

However, we find that Teed-Sparling' February 1988 analysis did not completely reflect the state of Pepperidge's actions as of the time of the subsequent OSHA inspection. Many of her 1987 recommendations that she believed had not been acted on by February 1988 actually were either: l) implemented, 2) experimented with and found wanting, 3) partially implemented, 4) in process, or 5) considered and rejected.

Pepperidge implemented the following recommendations by Teed-Sparling before OSHA's inspection, and the Secretary does not contest the speed or adequacy of these steps.

> l. It provided an isolated arm rest to reduce vibration exposure for those engaged in nut/raisin sorting.
>
> 2. It introduced lightweight spatulas to reduce excessive reaches for oven attendants (Teed-Sparling had recommended a different change; the Secretary does not contend the proposed change is inadequate).
>
> 3. It installed a platform to avoid dough depositor operator slips and falls.

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[121](...continued)
begs discussion. Nonetheless, in a record that contains an abundance of testimony about many matters, discussion of the appropriate role (and measure) of economic considerations in abatement was notably limited.

4. It installed diverters in May 1987 to move cups closer to the employee who loaded them into tins on line 6.

5. It changed the work space layout on the Institutional Goldfish line so that the employees did not have to twist to perform clip pickup and case blank forming and transfer.

6. It employed awareness programs. (This was done in 1986, prior to the 1987 audit).

7. It analyzed injury data in search of a significant pattern (and concluded that none was discernible).

8. It instituted a medical program.

9. It instituted an exercise program.

Pepperidge experimented[122] unsuccessfully with many of Teed-Sparling's other recommendations -- experiments of which she was not aware:

l. With regard to assortment line boxing and packaging, Pepperidge tried her recommendations to: a) move the cookie tins to the employees' side of the conveyor to reduce reaches and b) reorient cookies in the tins to eliminate wrist rotation in packaging. Pepperidge found Teed-Sparling's recommendations to be infeasible -- they resulted in equal or greater ergonomic problems for the employees.

2. With regard to cupping: (a) Pepperidge's Jackson testified that the first shift adopted the change she recommended to have cup dropping at alternate stations to allow 20 minutes rest between cup dropping jobs, but after experimentation the second and third shifts decided to employ the initial method; (b) Pepperidge investigated raising the height of the lower conveyors on lines 1, 5, and 6 to 32 inches above the floor, to improve the employees' leg clearance and permit them to sit, and found it infeasible; and, (c) Pepperidge's renewed efforts to develop an automatic cup dropping mechanism were unsuccessful.

3. With regard to the rotation of workers to less stressful jobs, Pepperidge experimented with different rotations within the biscuit department. The Secretary argues that all the biscuit line jobs were stressful, and that rotation to jobs outside that department was in order. However,

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[122]The term "experiment" was used by Pepperidge Farm witnesses and counsel.

neither Teed-Sparling nor the Secretary identified such jobs available for rotation ("job rotation").

Additionally, there were several actions considered by Pepperidge but rejected as infeasible:

1. With regard to Teed-Sparling's recommendation that Goldfish and cookie bags be "tripped" (set on their side) before packing into boxes (to improve wrist movements for employees who packed them into boxes), Hartman testified that after investigation the idea was not adopted because it would create other ergonomic problems. Specifically, it would make it more difficult for employees to reach the bags and to tuck the "gable" (top of the bags) prior to packing.

2. With regard to Institutional Goldfish case packing, Litvak testified that Teed-Sparling's recommendation to revamp the case sealer's minor flap handling mechanism was not adopted because it would result in uncomfortable movements by employees to seal the shipping cases.

3. As to Teed-Sparling's recommendation that employees with UEMSD symptoms be taught ambidexterity in cupping, Pepperidge decided it would be impractical, after discussion with senior employees.

Some other recommendations by Teed-Sparling were partially implemented or implemented in altered form by the time of OSHA's inspection:

l. Teed-Sparling recommended reducing the effective work height of the upper capping conveyors (lines 5 and 6) to 41 inches; Hartman prepared a plant order in April 1988 for a new upper capping conveyor on line 6 and the parts were received before OSHA's inspection. The new conveyor was installed in approximately September 1988. Pepperidge installed the same kind on line 5 after evaluating the success with line 6. However, after experimentation with the new line 5 conveyor, employees found it impeded their work space and exposed them to striking their hands against metal parts during their work. Pepperidge thus found the proposed new line 5 conveyor infeasible, and the Secretary has not suggested why such a conveyor would be feasible.

2. Teed-Sparling recommended installing "diverters" on lines 5 and 6 to move products toward the sides of conveyors so reaches would be reduced. Pepperidge installed diverters in about May 1987. The Secretary pointed out, however, that the diverter on line 5 was placed further down the

belt than had been recommended, so that 4 of the 6 line workers still had excessive reaches.

3. With regard to the installation of an automatic case packer on the Goldfish line, in Spring 1988 the Downingtown plant forwarded paperwork to purchase equipment; the equipment was installed in early 1989. The Secretary argues the time lag was excessive; Pepperidge states that normal procedures for large expenditures were followed.

4. Teed-Sparling urged that employees be taught how to avoid throwing their wrists in cupping and capping. Pepperidge trained new employees and Carpal Tunnel Task Force members in the new technique.

5. With regard to Teed-Sparling's recommendation to install an anti-fatigue mat in the capping operation, Hartman testified he understood that Teed-Sparling was referring to the metal flooring on line 6, not the brick surface on line 5. Hartman concluded that an anti-fatigue mat was infeasible on line 6 because the metal flooring had serrated, non-skid edges that would tear up the mat quickly. To abate the problem, Pepperidge replaced that flooring with a non-slip brick tile.[123]

6. Pepperidge partially implemented Teed-Sparling's 1988 recommendations to modify the cupping method by allowing employees to: (1) have cup dropping at every other station, allowing thumbs to rest 20 minutes between cup dropping and (2) eliminate "the dangerous practice of picking up the 5th 'top' Milano with the left hand while clutching the cups." Jackson testified that he implemented the changes Teed-Sparling sought, pending an evaluation of employee preferences. Ultimately, he testified, the evening and night owl shifts decided to go back to the prior methods.

Pepperidge did not act on two of Teed-Sparling's recommendations:

1. Pepperidge did not move the foot rails on lines 1, 2, 5, and 6 to provide a 9-inch clearance under conveyors for chairs. However, OSHA Industrial Hygienist (IH) Siletsky testified that merely moving the foot rail would not help, save in the case of line 2.

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[123]Hartman acknowledged anti-fatigue mats had been installed on the brick floor in the layer cake operation in the frozen food plant, but testified that the same hazards did not exist there. Mats would become slippery from grease build-up on the capping lines, and the heavy traffic there would create tripping hazards. Those problems did not exist in the layer cake operation.

> 2. Pepperidge did not provide a break between cupping and capping among its job rotation efforts. However, it experimented with job rotation within those lines, by having employees move from cupping to the relatively less repetitive position of straightening in capping, and working up to the more repetitive capping jobs from there. The employees on each line determined for themselves the rotation pattern they preferred. The A.M. and P.M. shifts liked the previous pattern best. The Night Owl shift, which had the least senior and experienced employees overall, preferred to apportion the capping and cupping tasks equally among all the positions, as Teed-Sparling had suggested. Also, when Teed-Sparling recommended a change in the way line 5 workers rotated with Goldfish line packaging workers, Litvak implemented the change immediately.

Pepperidge also took various actions that had not been recommended by Teed-Sparling:

1. It spent about $3,400 in the fall of 1987 to redesign a reject mechanism for line 5 because it had caused rows of cookies to get out of alignment when they arrived in the cupping area, and thus more difficult for employees to pick up.

2. It installed an automatic case packer on the Assortment Line in early 1987 at a cost of about $96,000.

The above summary does not provide a basis for finding, as the Secretary argues, that Pepperidge broadly failed to act on Teed-Sparling's recommendations.

b. Actions to Reduce Repetition

In addition to arguing that Pepperidge did not adequately respond to the Teed-Sparling recommendations, the Secretary argues that Teed-Sparling failed to consider actions to reduce repetition, and that Pepperidge consequently failed to take specific actions which were advocated by the Secretary's experts. Pepperidge contends in its review brief that "Teed-Sparling did not recommend reducing repetitive motion," thereby appearing to support the accuracy of the Secretary's critique of Teed-Sparling. The record, however, is not as clear as the parties would have us believe. Accordingly, we must determine what the parties mean when they argue about whether actions have been undertaken to reduce repetition.

In this regard we note, even when repetitions remain constant, reducing or eliminating a harmful work posture (*e.g.*, by training or new equipment) can reduce the number of *harmful* repetitions.[124] Also, the means of reducing repetition can take a number of forms. Here, they include l) automation, 2) the rotation of workers among tasks involving greater and lesser repetitions, 3) the reduction of conveyor belt speed or cookie drop rate, 4) work pauses (which reduce the number of repetitions per worker), and 5) the addition of workers to the assembly line (which also reduces the number of repetitions per worker).

Considered in this context, it cannot be said that Teed-Sparling's recommendations, and Pepperidge's actions, did not include the reduction of repetition. As discussed above, Teed-Sparling proposed automation and rotation -- both of which were undertaken to a degree before the inspection. Both steps had the effect of reducing certain repetitions. Also as discussed above, Teed-Sparling proposed measures to improve employee postures; some of those measures were adopted and some were tried unsuccessfully. Those actions addressed the reduction of *harmful* repetitions.

More specifically, Pepperidge took steps that had the effect of reducing certain repetitions. First, Pepperidge installed an automatic case packer on the Institutional Goldfish line to eliminate manual packing of the institutional containers. Pepperidge also made job rotation changes within the Biscuit Department. Furthermore, it implemented Teed-Sparling's 1988 recommendations to: (1) limit cup dropping to every other station, thus

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[124]Commissioner Guttman further notes that the record shows that the reduction of repetitions *per se* is not necessarily the solution to these types of hazards. Although the injuries Pepperidge's employees received here are often called "repetitive motion injuries," the record shows that the hazard depends on the degree of repetition and whether it involves postures that are harmful and/or require the use of force (*e.g.*, squeezing or cutting against resistance). In addition, the evidence shows that injury has also been associated with tasks involving vibration.

allowing thumbs to rest 20 minutes between cup dropping, and (2) eliminate picking up the 5th Milano cookie with the left hand while clutching the cups.[125]

Pepperidge made additional attempts to eliminate some forms of repetition through automation and better work methods. Pepperidge tried to develop a method or mechanism to automatically drop the cups. Pepperidge made significant efforts to automate the placement of cookies. It also made many attempts to automate the capping of chocolate sandwich cookies -- primarily at Downingtown. In January 1988, following Teed-Sparling's recommendation that each employee cup or cap complete cupfuls (so as to even out the number of repetitions at the different positions on the line), Pepperidge sent June Urbine (then a biscuit line leader) to its Willard, Ohio plant where that method was in use and tried it at Downingtown. Pepperidge also tried to implement Teed-Sparling's recommendation to eliminate the repetitive wrist rotations that assortment line packagers made when placing two types of cookies into assortment boxes.

Thus, we find that the gravamen of the Secretary's criticism is not Pepperidge's general failure to address repetition but its failure to take specific actions advocated by the NIOSH ergonomists who testified for the Secretary. This requires us to consider under the *National Realty* test whether the Secretary established that these specific actions were feasible and likely to reduce risk.

4. Further Steps Advocated by the Secretary

The Secretary presented the testimony of NIOSH ergonomists Daniel Habes and Dr. Vernon Putz-Anderson to establish that Pepperidge could have taken the following additional actions to abate the hazards: (1) adding workers to each of the lines, (2) introducing micropauses into the conveyors to interrupt the work flow periodically, (3) reducing the line speeds, and (4) rotating employees out of highly repetitive jobs to less repetitive ones.

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[125] Jackson testified that ultimately the evening and night owl shifts decided for themselves to go back to the prior method, however.

The judge accepted both Habes and Putz-Anderson as experts in ergonomics. Dr. Putz-Anderson generally testified that "adding an individual to the line is one approach for reducing the repetition for each individual." Habes testified that OSHA Industrial Hygienist Siletsky's videotape showed 8 or 10 assortment packers in October 1988, but that there were 12 packers on that line, and two other employees monitoring the positions, when he visited the plant in November 1989. The record shows that the increase in staff was the result of a special holiday assortment that was essentially twice the size of the others and contained 12 different kinds of cookies rather than 6. The record does not contain other significant evidence of the feasibility of adding employees to the lines at Downingtown.

Teed-Sparling noted that Pepperidge had increased the number of employees working at the capping conveyors by early 1988. Thus, Pepperidge considered the issue and had implemented a change for capping before the inspection.

Dr. Putz-Anderson testified that Pepperidge could have introduced micropauses into the work flow to allow employees to rest their muscles and tendons. For example, he testified, Pepperidge could have installed a control on the cookie drop system "whereby the flow of batter would be temporarily shut off for a few seconds." Dr. Putz-Anderson admitted, however, that he did not know how the dough depositor or ovens operated, or whether a control of the kind he discussed actually could be installed on Pepperidge's lines. Furthermore, Biscuit Operation Manager Litvak testified without contradiction that "micropauses" by the dough operator would not be feasible because interrupting the flow of cookies that way creates empty space on the conveyor that goes through the tunnel oven, causing oven temperatures to increase erratically and unacceptably, resulting in burning cookies.

Dr. Putz-Anderson further recommended that Pepperidge experiment with reducing line speeds in increments to assess whether employees' UEMSD-related symptoms abated. He testified that a method used quite commonly by ergonomists is a "psychophysical method." First, a questionnaire is used to determine the level of discomfort and symptoms

that the employees experience working at the current speeds. Then the line speed is reduced, normally in increments of about 10 percent. After a week or two, the employees are questioned again to determine if there has been a "reduction in the amount of reported symptoms of local muscle fatigue, tenderness or pain in the hands, arms, wrists or neck." However, Dr. Putz-Anderson did not testify to any specific instance where that method had been tried successfully. Nor did the Secretary present any evidence that slowing down the line by 10 percent or more would not effect the quality of the cookies.[126]

Finally, the Secretary argues that Pepperidge could have attempted a different form of rotation -- rotating the biscuit line employees into jobs outside those lines periodically-- to allow recovery of the muscles and tendons that were subjected to highly repetitive motions. Dr. Putz-Anderson testified that Pepperidge's rotation within the biscuit line was insufficient because "[i]n many cases, [the employees are] rotating to jobs which are identical to the jobs that they've rotated from." Habes and Dr. Putz-Anderson testified that to be effective, job rotation should have placed line workers into jobs in which they did not have to use the same muscle groups repeatedly. Neither Habes nor Putz-Anderson, however, identified specific jobs to which the employees could have rotated to provide a recovery period from the highly repetitive jobs.

The Secretary also relies on Teed-Sparling's statement in her 1987 Audit that the "job rotation program in effect in the biscuit plant should be redesigned to rotate employees from stressful to less stressful jobs." Teed-Sparling, however, also did not identify the "less stressful jobs" to which she referred.

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[126]Pepperidge permitted employees to reduce line speeds to a minor extent -- but not 10 percent -- by lengthening bake time, slowing down the cookie drop rate, and slowing the packaging belt. Biscuit operations manager Jackson testified that under the standards set at Pepperidge's headquarters, it was permitted to deviate no more than 15 seconds from the standard baking time. There was testimony that cookies commonly had a bake time of eight minutes, and the Secretary has not presented evidence of how Pepperidge could produce the same quality of cookies with a bake time 10 percent longer.

Therefore, we conclude that with regard to three of the additional means of abatement which she sought, the Secretary has not established their feasibility at Pepperidge's Downingtown plant. With respect to the addition of employees to the line, the Secretary has arguably met her burden of demonstrating feasibility by showing on occasion the company did add workers. However, under all the circumstances and noting that Pepperidge has followed an incremental process approach, we cannot find that the Secretary has met her burden of showing that this measure would materially reduce the hazard.[127]

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[127]Commissioner Guttman notes that if repetition is a cause of UESMDs, it would seem *a priori* likely that reduction in repetition (*e.g.,* through addition of workers to the assembly line) would tend to reduce the incidence of injury. As Pepperidge Farm points out, details of the relationship between levels of repetition and injury (*i.e*., the dose-response relationship) are not presently clear. Thus, reducing repetitions by 50 percent, or maybe 25 percent, or even 10 percent might have a substantial effect on the injury rate. The effect of increasingly more marginal alterations is, on this record, less than clear. At the same time, as noted, reduction may have costs---both in dollars and cents and risk of potential new harm.

As discussed above, the absence of certainty as to the contours of the dose-response relationship cannot, where a significant risk is present, be invoked to preclude a section 5 (a)(1) order that hazard must be abated. But, and this would seem to be the other side of the coin, given the uncertainty as to the dose-response relationship, the burden on the Secretary is to demonstrate that specific abatement proposals are *likely to materially reduce injury when acted upon at a level that is feasible at the particular worksite*. It is not enough merely to assert that more workers could be added to the assembly line, a step which, Chairman Weisberg and I agree, may well have been *feasible to some degree*. To be clear, I agree with the Secretary that she is not required to show, *e.g.*, "just how many injuries would be prevented under a given safety measure." (Secretary Brief. at 100). What is called for, and what the Secretary appears to invite, is evidentiary presentation that a given action is both within the range of what is feasible at the worksite and is reasonably likely to produce a material reduction in hazard. It is when measured by this test that I share the Chairman's conclusion that the Secretary has failed to demonstrate her case here, even though a specific action she urges (adding workers to the assembly line) has not been implemented and might be feasible to some degree.

In support of the proposition that "the proposed abatement measures would have materially and quantifiably reduced ergonomic injuries," the Secretary relies on the testimony of Habe

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[127](...continued)
and Putz-Anderson and "numerous scientific studies which clearly demonstrated that the reduction of repetitive work, and the modification of workplace designs, had materially reduced the incidence of cumulative trauma disorders in the workplace." (Secretary Brief at 106).

However, neither the Secretary's ergonomic witnesses nor NIOSH (where they worked) had performed follow up studies to determine the efficacy of the specific means of reducing repetition advocated by the Secretary. Thus, the witnesses did not testify to personal experience with the results of any of the proposed methods at a particular location. This absence underscores the importance of Pepperidge's experience (as we discuss in the text) on the one hand, and the research articles cited by the experts, on the other.

On inspection, the articles relied on by the Secretary do not support her case. They provide only limited reporting on experiences in which repetition reduction resulted in injury reduction. Most pointedly they do not appear to show specific instances in which adding workers to assembly lines was tried. Thus:

GX 150, a study of female photographic film rollers in Japan, did show that a greater number of rest periods and a reduction in working time was associated with a decrease in injuries. However, the measures did not appear to include assembly line addition of workers, and the injuries at issue were cervicobracheal disorders (injuries of the "neck-shoulder-arm" region, and not carpal tunnel syndrome or other injuries of the hand or wrist area).

GX 155, a research review article, does not appear to include cases involving a reduction in the rate of an assembly line or the addition of workers. (For those studies in which both methods of intervention and results were shown, three involved increased pauses and reported reductions in complaints; one of these also involved rotation.)

GX 157 is an article that discusses a technique for analyzing repetitive tasks and the time needed to recover from repetitions. The article explains that the approaches used to reduce complaints of workers on assembly lines include rotation, adding labor, additional breaks, and using 'natural selection' to "weed out people who have difficulty on the repetitive tasks." The author reports that "[t]hese approaches have not solved the problems but have reduced difficulties with the jobs and have permitted production to continue." The author does not refer to slowing of the line, and does not identify any specific instances (and results) in which pauses, assembly line speed reduction, or addition of workers was used as an intervention.

GX 158 reports on the ergonomics program at a manufacturer of sutures. The article describes the work of an ergonomics task force. The article does not identify any specific
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5. Conclusion

On this record, we conclude that the Secretary has failed to establish that the process engaged in by Pepperidge to abate the ergonomics hazards at Downingtown was insufficient. Further, the Secretary has not shown that the additional steps not taken by Pepperidge were feasible and that their efficacy in reducing the hazard was so compelling that the failure to have implemented them by the time of the inspection rendered Pepperidge's process inadequate. Accordingly, we uphold the judge's dismissal of this citation item.

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[127](...continued)
instance of the use of rotation, assembly line speed reduction, the addition of workers or the use of pauses. The sole instance in which specific results are reported involves an exercise program (seven minutes, twice daily); the article reports this program reduced UESMDs related medical department visits from 76 to 28 a month.

GX 159 reviewed efforts to control UESMDs associated with hand tool operations in the telecommunications industry. The paper describes a program which included modification of the design of hand tools, training, and injury data research.

GX 161 did not clearly identify any instance of the use of reduction of assembly line speed, rotation, pauses, or the addition of workers. It did indicate a process that took from three to four years, in which the initially implemented changes were "small."

I note that, as indicated by our conclusion to this section, had the Secretary provided evidence that the further actions she urged were materially likely to reduce hazard in a manner feasible at Downingtown, this evidence would need to be weighed against Teed-Sparling's testimony that implementation of her recommendations had drastically reduced injuries elsewhere (and would therefore be sufficient), as discounted by the evidence that her recommendations were only partially capable of implementation at Downingtown.

In sum, it may well be that the specific actions sought by the Secretary had been implemented elsewhere with demonstrable success. It may also be the case that from the vantage of common sense, the addition of more workers would seem likely to reduce repetitions and therefore injuries. However, the Secretary has not urged us to judge her abaatement proposals simply by what is technically feasible and might, *a priori*, seem likely to work; rather, she has asked us to judge her experts' proposals by their ability to show that they have worked elsewhere, or are in some significant way supported by more than naked expert say-so. The evidence that we have been referred to does not meet this test.

WEISBERG, CHAIRMAN, SEPARATE OPINION ON PENALTIES FOR LIFTING VIOLATIONS:

Judge Oringer found that "the Secretary's proposed penalty of $5000 for each of the lifting violations is appropriate and each employee who was exposed constitutes a separate instance of violation." He therefore assessed a penalty of $105,000, representing $5000 per instance for each of the 21 affirmed violations of section 5(a)(1), *i.e.*, citation 1, items 3(a)-(d) & (f). Pepperidge argues, however, that the judge had no authority to assess penalties for the section 5(a)(1) violation(s) described in the citation on a per-employee basis. In addition, Pepperidge argues that the amount assessed is excessive in view of the evidence relating to the four statutory penalty factors -- size, past history and good faith of the employer, and gravity of the violation(s).

With respect to the Commission's authority to assess penalties for 5(a)(1) violations on a per-employee basis, I adhere to the views I expressed in my dissenting opinion in *Arcadian Corp.*, 17 BNA OSHC 1345, 1356-61, 1995 CCH OSHD ¶ 30,856, pp. 42,924-29 (No. 93-3270, 1995), *petition for review filed*, No. 96-60126 (5th Cir. Feb. 29, 1996). In that case, I relied primarily on Commission precedent upholding the Secretary's authority under section 5(a)(2) of the Act to issue citations on a per-instance/per-employee basis, depending on the language of the particular standard or regulation cited, as well as the express language of section 5(a)(1), to "find that the Secretary is not precluded from citing section 5(a)(1) on a per employee basis as a matter of law." 17 BNA OSHC at 1356, 1995 CCH OSHD at p. 42,924. However, I further reasoned that, because "not all general duty clause violations lend themselves to multiple citations," the Secretary is "obligated to show why instance-by-instance citations are warranted in the particular section 5(a)(1) case." 17 BNA OSHC at 1360, 1995 CCH OSHD at p. 42,928. I concluded that the Commission should assess separate penalties for each exposed employee, as proposed, only when one of two alternative tests is met, *i.e.*, "*either* where the action or conduct giving rise to each separately-cited violation of the general duty clause involves an act that is physically discrete or distinctly individual in nature *or* where the evidence shows that the circumstances in the case warrant

the use of this extraordinary enforcement tool." 17 BNA OSHC at 1356, 1995 CCH OSHD at p. 42,924.

I have carefully considered Commissioner Guttman's criticisms of the position I articulated in *Arcadian*, but conclude that they lack merit. Commissioner Guttman primarily objects to the two-pronged test I set forth in *Arcadian* on the ground that it is not "clear enough to give notice to future Respondents" of the circumstances under which employers may be subjected to per-employee penalties for violating section 5(a)(1).[128] Commissioner Guttman apparently concedes that "a fair reading of" the standards and regulations at issue in such section 5(a)(2) cases as *Sanders Lead Co.*, 17 BNA OSHC 1197, 1993-95 CCH OSHD ¶ 30,740 (No. 87-260, 1995), and *Caterpillar, Inc.*, 15 BNA OSHC 2153, 1991-93 CCH OSHD ¶ 29,962 (No. 87-922, 1993), "leads to per employee penalties." However, he suggests that this notice is lacking in a section 5(a)(1) case, unless the case rises to a level of "egregiousness" that "provide[s] both [a] reasonable basis for the penalties and its own

[128]I note that, while Commissioner Guttman has criticized me for failing to give adequate guidance as to when per employee penalties should be assessed for section 5(a)(1) violations, Commissioner Guttman has made little effort to define for employers, employees, much less other Commissioners, the circumstances under which he himself would assess such penalties. For example, Commissioner Guttman expresses his agreement with my view that, "as a general proposition," ergonomic hazards may be cited on a per employee basis under section 5(a)(1), but he then adds that per employee penalties are not appropriate in all ergonomics cases and that this determination must be made in the context of the particular case. While Commissioner Guttman reveals that his determination will *not* be governed by either "the possibility that violative conditions can be abated by a single action" or "the happenstance of the abatement remedy ultimately selected," he gives no clue as to the circumstances that *will* govern his determination as to whether particular ergonomic hazards have been properly cited on a per employee basis. More generally, Commissioner Guttman states, with respect to *all* section 5(a)(1) violations (not just ergonomics cases) that he "might contemplate the possibility of circumstances sufficiently egregious as to provide both reasonable basis for the penalties and its own form of notice to the employer." Nevertheless, Commissioner Guttman is surely not claiming that this "test" is either clearer than or provides greater guidance than the two-pronged test I articulated in *Arcadian*, as quoted above.

form of notice to the employer." I respectfully disagree. In my opinion, the language of section 5(a)(1) gives employers just as much notice of the possibility of per-employee penalties as they receive from the language of the standards and regulations at issue in *Sanders Lead* and *Caterpillar*.[129]

Moreover, I believe that Commissioner Guttman's views on the assessment of per-employee penalties in the section 5(a)(1) context cannot be reconciled with his views on the assessment of per-instance/per-employee penalties in the section 5(a)(2) context. As indicated, Commissioner Guttman's concern over the problem of notice when section 5(a)(1) is cited on a per-employee basis is so great that he would only permit such citations when the cited acts or omissions rise to a level of "egregiousness" that is sufficiently high that the very nature of the employer's misconduct gives it notice of the possible imposition of multiple penalties. Yet, in the section 5(a)(2) context, Commissioner Guttman would seemingly adhere to Commission precedent, which gives the Secretary *totally unfettered discretion* to cite on a per-instance basis (or alternatively to group the violations in a single citation, if she so chooses) so long as the standard or regulation at issue *can be* interpreted in such a manner that each individually cited instance of noncompliance constitutes a distinct and separate violation of the standard or regulation.[130] Indeed, in the section 5(a)(2) context,

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[129]For example, one of the standards at issue in *Sanders Lead* was 29 C.F.R. § 1910.1025(f)(3)(ii), which states, in pertinent part, that "*[e]mployers shall perform* either quantitative or qualitative face lift tests . . . *for each employee* wearing negative pressure respirators" (emphasis added). The similarity between this language and the language of section 5(a)(1) is obvious. Thus, section 5(a)(1) states that "[e]ach *employer . . . shall furnish to each of his employees* employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees" (emphasis added). To me, it seems beyond dispute that, if "a fair reading of" § 1910.1025(f)(3)(ii) "leads to per employee penalties," then so also does "a fair reading of" section 5(a)(1) of the Act.

[130]The Commission's deference to the Secretary's decisions as to whether to group particular section 5(a)(2) violations or to cite them on an instance-by-instance basis is consistent with (continued...)

the Commission has shown itself to be markedly unconcerned about whether the cited employers have had adequate notice of the possibility that they could be cited on a per-employee/per-instance basis. For example, in *Caterpillar*, the Commission upheld the Secretary's decision to cite 29 C.F.R. § 1904.2(a) on a per-employee/per-instance basis even though it acknowledged that the citation before it was a dramatic departure from the Secretary's long-standing practice of interpreting and citing the regulation in a different manner. Under this prior interpretation of the regulation, an employer's failure to maintain a complete and accurate log of injuries and illnesses had consistently been treated as a single violation of the regulation, warranting only a single citation and proposed penalty, regardless of how many unrecorded or erroneously-recorded injuries and illnesses may have been involved. 15 BNA OSHC at 2170, 2172, 1991-93 CCH OSHD at pp. 41,003, 41,006.

It seems clear to me that the employer in the *Caterpillar* case had *no greater notice* than the employer in the instant case of the possibility that it could be cited for the violations at issue on a per-instance/per-employee basis. I therefore conclude that the sharp distinction Commissioner Guttman would draw, *on notice grounds*, between the Secretary's authority under section 5(a)(1) and her authority under section 5(a)(2) is wholly unwarranted.[131]

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[130](...continued)
a long line of cases acknowledging the Secretary's broad prosecutorial discretion with regard to all matters concerning citations and proposed penalties. The Commission exercises its control over these discretionary acts by reviewing the allegations of the Secretary's citations to determine whether the alleged violations are supported by a preponderance of the record evidence and by independently determining, on the basis of the record, what penalty amounts are "appropriate" in light of the gravity of the violations and the size, past history, and good faith of the employer. Apart from these statutorily-mandated controls and limitations on the Secretary's prosecutorial discretion, the Commission has generally not considered it appropriate to tell the Secretary how she should draft her citations, even when, inevitably, the penalty is collaterally affected. Lack of predictability concerning the manner in which, or even whether, a particular violation will be cited is an unavoidable consequence of this prosecutorial discretion.

[131]There is, of course, another "notice" issue in every section 5(a)(1) case, given the broad
(continued...)

Accordingly, I adhere to the test I set forth in *Arcadian*, which seeks to establish a rough equivalency between the Secretary's ability to cite on a per-instance/per-employee basis in the section 5(a)(2) context and her ability to use this highly significant enforcement tool in the 5(a)(1) context.

Here, the Secretary has attempted to justify her penalty proposal on the ground that Pepperidge's multiple violations of section 5(a)(1) were "egregious" willful violations meeting the criteria set forth in her internal guidelines at OSHA Instruction CPL 2.80 (Oct. 1, 1990) for the issuance of per-instance/per-employee citations. However, after reviewing the record on appeal, I am unable to find that a "per exposed employee [unit of prosecution] is reasonable based on evidence showing the circumstances in the case to be extraordinary," within the meaning of my *Arcadian* test. On the other hand, after examining "the action or conduct giving rise to the general duty clause violation," I conclude that the Secretary's proposed assessment of per-employee penalties *is* appropriate in this case, because "the employer's failure to protect its employees against recognized hazards manifest[ed] itself through acts or omissions that [were] uniquely individual in nature." *See* 17 BNA OSHC at 1360, 1995 CCH OSHD at p. 49,929. Specifically, Pepperidge's failure to protect the 21 employees at issue against the recognized hazards described in the citation "manifest[ed]

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[131](...continued)
language of this statutory requirement, and it involves the adequacy of notice to the employer that the cited acts were prohibited or that the cited omissions were mandated. Under the case law, however, this notice problem is resolved by requiring the Secretary to prove both that the cited hazard was "recognized" and that it was preventable, *i.e.*, the Secretary must prove the feasibility and likely utility of measures that the employer could have taken to eliminate or at least materially reduce the hazard. When section 5(a)(1) is limited in this manner, the notice it provides to employers of their legal obligations is, as a matter of law, just as adequate as the notice provided by a standard or regulation. Accordingly, the sharp distinction drawn by Commissioner Guttman between the Secretary's authority to cite on a per-employee basis under section 5(a)(2) and her authority under section 5(a)(1) cannot be justified on the basis of any asserted inadequacy of notice of the legal duties imposed by section 5(a)(1).

itself through" its failure to evaluate their individual work activities and working environments and to devise and implement plans, based upon those evaluations, for minimizing each employee's risk of back injury through administrative controls, engineering controls, or an effective combination of both. This is the type of conduct for which the Commission has upheld per-employee citations in cases involving violations of standards. *E.g.*, *Sanders Lead.*

More specifically, I conclude that the hazards associated with manual lifting tasks in the workplace are a widely-recognized example of "ergonomic" hazards and that ergonomic hazards are virtually by definition "uniquely individual in nature," as are the "ergonomic solutions" that must be devised to minimize, if not totally eliminate, them. Indeed, Taber's *Cyclopedic Medical Dictionary* (17th ed.) defines "ergonomics" as "[t]he science concerned with how to fit a job to a [worker's] anatomical, physiological, and psychological characteristics in a way that will enhance human efficiency and well-being." Similarly, the Secretary's witness, Dr. Putz-Anderson, a NIOSH section chief involved in the writing of the NIOSH lifting guide, testified that an "ergonomic solution" is one that "[designs the] workplace to fit the people rather than trying to get people to fit the workplace" and further that "ergonomics is concerned with . . . how we can design our environment, our workplace, our work station, our tools to match and meet the capabilities and limitations of the people that are engaged in those jobs." Because ergonomics focuses on the impact of the job functions on the individual performing the job, the choice of an effective means of eliminating or materially reducing ergonomic hazards *may* depend on the individual to whom the remedy is applied. Or it may not. For example, while the optimal solution to a given ergonomic hazard may be a change in work processes that is unique to a particular worker, *e.g.,* training that worker in proper lifting techniques, it may alternatively be a change in work processes that is not dependent on any specific individual but rather affects equally any and all employees who perform a particular work task, *e.g.*, eliminating the need to lift a particular object manually by providing a mechanical lifting device.

This distinction between employee-based and process- or environment-based solutions is embodied in the concepts of "administrative and engineering controls." A guide edited by Dr. Putz-Anderson and introduced as an exhibit in this case distinguishes between these two broad categories of "ergonomic solutions"as follows:

> Administrative controls refer to those actions taken by the management or medical staff to limit the potentially harmful effects of a physically stressful job on individual workers. Administrative control is achieved by **modifying existing personnel functions** such as worker training, job rotation, and matching employees to job assignments. In other words, the control actions are focused on the worker . . . .
>
> By contrast, engineering control focuses on the job or work environment. The aim here is to redesign the job or tool to achieve control over those job factors associated with the onset of CTDs.

(GX 168 at 75, emphasis in original).

Section 5(a)(1) of the Act places no restriction on an employer's freedom to choose between administrative and engineering controls, or to choose some combination of both, in designing its own "ergonomic solution" to any particular ergonomic hazard that arises in its workplace. Section 5(a)(1) establishes only a performance standard that must be met, *i.e.*, the employer must render its workplace "free from [those] recognized hazards that are causing or are likely to cause death or serious physical harm to [its] employees." The statute does not specify the particular measures that the employer must take to attain this objective and does not even state a preference between engineering and administrative controls. Similarly, the citation at issue in this case gave Pepperidge broad flexibility in selecting or designing the ergonomic solutions it deemed to be the optimal means for abating the ergonomic hazards described in the citation. What the Secretary *required* Pepperidge to do was to come up with *some* combination of administrative and engineering controls that would materially reduce the described hazards and to *consider* those circumstances that were "uniquely individual" to each of the exposed employees in fashioning its abatement

remedies. Otherwise, the citation's emphasis was on maintaining the flexibility that section 5(a)(1) itself grants to employers in abating "recognized hazards."

I therefore conclude that the violations at issue here are closely analogous to the multiple violations of 29 C.F.R. § 1926.500(g)(1) that were at issue in *Hartford Roofing Co.*, 17 BNA OSHC 1361, 1995 CCH OSHD ¶ 30,857 (No. 92-3855, 1995) (Weisberg, Chairman, dissenting), with the principal difference being that that case arose under section 5(a)(2) of the Act rather than section 5(a)(1). Under the clear terms of section 1926.500(g)(1), Hartford had a duty to protect *each* of the six employees who were engaged in built-up roofing work at the inspected workplace from the hazard of falling from the roof's perimeter. However, the cited standard expressly gave Hartford a range of options in terms of the particular measures it could have taken to prevent such falls. Hartford could have selected a single means of protection, such as perimeter guardrails, that would have provided the same, undifferentiated fall protection to any person who came up onto the roof, including the six specified employees. Or it could have selected a protective method, such as the distribution and required use of personal safety lines, that would have provided separate, personal protection for individual employees. Finally, Hartford could have complied with the cited standard by selecting different forms of protection for different employees or groups of employees. I believe that this is precisely the situation that existed at Pepperidge's workplace with respect to employees exposed to lifting hazards. Therefore, just as I would have upheld the Secretary's proposal to assess penalties on a per-employee basis in *Hartford Roofing*, I would also uphold the Secretary's proposal to assess penalties on a per-employee basis in this case.

The fact that the Secretary's evidence and the judge's findings on the feasibility of abatement were focused on ergonomic solutions that would have protected groups of employees, *e.g.*, all employees manually lifting bags of sugar, rather than only individual employees, is of no consequence in determining whether per employee penalties are warranted in this case. Neither the contested citation nor section 5(a)(1) itself required

Pepperidge to implement the specific abatement measures that were recommended by the Secretary's witnesses and/or found feasible by the judge. Rather, following the hearing and the judge's decision, Pepperidge retained the same flexibility it had had under the citation's abatement requirement to devise its own ergonomic solutions to the cited ergonomic hazards. As the Commission stated in *Brown & Root, Inc., Power Plant Div.*, 8 BNA OSHC 2140, 2144, 1980 CCH OSHD ¶ 24,853, p. 30,656 (No. 76-1296, 1980):

> Section 5(a)(1) requires the employer to free its workplace of recognized hazards. The Act, however, does not specify the manner by which recognized hazards are to be removed from the worksite. Accordingly, the employer may use any method that renders its worksite free of the hazard and *is not limited to those methods suggested by the Secretary*.

(Emphasis added). *See also Whirlpool Corp.*, 7 BNA OSHC 1356, 1359, 1979 CCH OSHD ¶ 23,552, p. 28,533 (No. 9224, 1979), *rev'd and remanded*, 645 F.2d 1096 (D.C. Cir. 1981) ("Section 5(a)(1), which imposes a general duty on employers, is broadly worded and *unlimited to any* particular hazards or *particular methods of abatement*") (emphasis added).

Accordingly, I believe the opinion voiced by Commissioner Guttman and Commissioner Montoya that the citation item at issue here describes at most four separate violations of section 5(a)(1) is based on their failure to distinguish between the Secretary's evidence on feasibility and the employer's duty under section 5(a)(1). In describing the Secretary's burden of proof in a 5(a)(1) case, the Commission has long employed the following four-part test: "To establish a violation of the general duty clause, the Secretary must show that (1) a workplace condition or activity presented a hazard, (2) the employer or industry recognized it, (3) it was likely to cause serious physical harm, and (4) a feasible and useful means of abatement existed by which to materially reduce or eliminate it." *Kokosing Constr. Co.*, 17 BNA OSHC 1869, 1872, 1997 CCH OSHD ¶ 31,207, p. 43,724 (No. 92-2596, 1996). However, in contrast to the first three elements of the Secretary's burden of proof, which flow directly from the language of section 5(a)(1), the fourth element is merely a judicially and administratively constructed limitation on the Secretary's authority. By requiring the Secretary to "formulate and defend his own theory of what particular steps

the employer should have taken to abate the hazard," *Whirlpool Corp.*, 7 BNA OSHC at 1360, 1979 CCH OSHD at p. 28,535, the courts and the Commission have sought to (a) cure the notice problems inherent in the broad scope of the statutory language and (b) restrict the scope of section 5(a)(1) to the elimination or mitigation of hazards that are preventable. *See, e.g.*, *National Realty & Constr. Co. v. OSHRC*, 489 F.2d 1257, 1265, 1268 (D.C. Cir. 1973). These holdings have *not* sought to alter in any way the "general duty" imposed on employers under section 5(a)(1). Accordingly, while the Secretary as a matter of law bears the burden of proving that a cited recognized hazard can be abated and that such abatement is "feasible," neither the evidence introduced by the Secretary in support of his feasibility allegations nor the judge's findings on the feasibility issue restrict the flexibility that the employer otherwise has under the express terms of section 5(a)(1) in deciding how to abate the cited violation.

Because I still believe that the Commission's decision in *Arcadian* was "wrongly decided," I would have no hesitation in joining in a decision to overrule *Arcadian* in an appropriate case at an appropriate time. Noting, however, that the Secretary's direct appeal of *Arcadian* to the U.S. Court of Appeals for the Fifth Circuit is pending, and a decision is expected shortly, I do not think it prudent to do so now without the benefit of the Fifth Circuit's opinion in *Arcadian*. In any event, I believe that it is not necessary to overrule *Arcadian* in order to uphold the Secretary's proposal of per-employee penalties in the instant case. *Arcadian* is clearly distinguishable from this case, which appears to be a proper case for the issuance of multiple citations even under the criteria established by the *Arcadian* majority. *See* 17 BNA OSHC at 1351, 1995 CCH OSHD at p. 42,919 ("[t]here may be circumstances under which different hazards can be cited as section 5(a)(1) violations requiring different abatement actions"). *Cf. Hartford Roofing*, 17 BNA OSHC at 1365, 1995 CCH OSHD at p. 42,933 (views of same Commission majority) ("[s]ome standards implicate the protection, etc. of individual employees to such an extent that the failure to have the protection in place for each employee permits the Secretary to cite on a per-instance basis").

In *Arcadian*, the Commission majority framed the issue before it as follows: "The issue presented in this case is a narrow one: whether . . . [the judge] erred in dismissing eighty-six of eighty-seven *nearly identical items* contained in a single citation . . . based upon his ruling that . . . [the Act] does not vest the Secretary with the authority to cite for each individual employee exposed to *the same* hazardous condition(s)." 17 BNA OSHC at 1345, 1995 CCH OSHD at p. 42,913 (emphasis added). Emphasizing their findings that all 87 employees had been exposed to a *single* recognized hazard (*i.e.*, the possibility that a urea reactor would explode, injuring anyone who happened to be in sufficiently close proximity to it) and that affirmance of the multiple charges would result in the entry of *the same* abatement order 87 times, the Commission majority concluded that the Secretary had exceeded his authority by citing that violation on a per-employee basis. In contrast, the alleged violations of section 5(a)(1) at issue in this case have little in common with the *Arcadian* violations. While each of the 21 employees identified in subitems 3(a)-(d) & (f) was exposed to the possibility of injury during manual lifting operations, the nature of their exposure was such that it was highly unlikely that more than one employee could be injured as the result of any single incident. Moreover, each employee was exposed to the possibility of back injury while lifting separate loads, of different sizes and shapes, and performing separate actions to lift those loads. Finally, under the circumstances cited, Pepperidge could have eliminated the lifting hazard with respect to a single employee while leaving all of the other employees exposed to lifting hazards; yet, no single abatement measure or set of abatement measures could have eliminated the cited hazards with respect to all 21 employees. Under these circumstances, I conclude that, even under the governing principles laid down by the Commission majority in *Arcadian* and *Hartford*, Pepperidge has been properly cited on a per-employee basis for "different hazards … requiring different abatement actions"[132] since "the protection … of in

[132]Applying this same test, Commissioner Montoya concludes that the Secretary has "alleged (continued...)

dividual employees" has been "[implicated] to such an extent that the failure to have the protection in place for each employee permits the Secretary to cite on a per-instance basis."

I also reject Pepperidge's challenge to the amount of the penalty assessed by the judge. The gravity of the violations is relatively high in view of the number of exposed employees (21), the duration of their exposure (on a daily basis), and Pepperidge's failure to take any meaningful precautions to prevent injury. In view of the willfulness of Pepperidge's violations and its "refusal to abate the hazard that was pointed out long prior to the inspection," as Judge Oringer put it, no credit is warranted for good faith. Pepperidge's size also weighs in favor of a high penalty. Indeed, Pepperidge, a very large employer, had between 1400 and 1500 employees at the Downingtown plant alone. Pepperidge's past history is a factor that weighs in Pepperidge's favor. While Pepperidge had been inspected six times since 1972, it had not previously been cited for lifting violations.

Weighing all of these statutorily-identified factors, I conclude that the $105,000 penalty proposed by the Secretary and assessed by the judge for Pepperidge's 21 violations of section 5(a)(1) is an "appropriate" penalty. Nevertheless, I acknowledge that the Commission majority does not support my position. On the contrary, the three sitting

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[132](...continued)
only four distinct lifting hazards existing at Pepperidge Farm's Downingtown facility" and that "Commission precedent, as stated in *Arcadian*, [therefore] allows no more than four general duty clause citations for lifting violations here." I disagree. The contested citation in this case treats each of the 21 employees at issue as being exposed to a distinct lifting hazard, and it requires Pepperidge to take individualized abatement actions with respect to each of the identified employees. The Secretary's charge is therefore consistent with the very nature of ergonomic hazards, requiring consideration of both the task and the employee performing the task. Thus, even when two employees are performing an identical lifting task, they may be impacted differently, due, for example, to differences in lifting techniques, in work environment or in individual lifting capacity, and they are therefore exposed to "different hazards," which may or may not "requir[e] different abatement actions."

Commissioners have taken three different positions on the penalty assessment issue. Therefore, in order to avoid an impasse in this case, I join Commissioner Guttman in assessing a lesser penalty of $20,000 for the willful violations of section 5(a)(1) described in citation 1, items 3(a)-(d) & (f). *See Gates & Fox Co.*, 12 BNA OSHC 1092, 1096, 1984-85 CCH OSHD ¶ 27,129, p. 34,996 (No. 78-2831, 1984), *aff'd in part and rev'd in part*, 790 F.2d 154 (D.C. Cir. 1986).

GUTTMAN, COMMISSIONER, SEPARATE OPINION ON PENALTIES FOR LIFTING VIOLATIONS:

Judge Oringer found that "the Secretary's proposed penalty of $5,000 for each of the lifting violations is appropriate and each employee who was exposed constitutes a separate instance of violation." In support of his conclusion, the judge cited Judge

Burroughs' decision in *Interstate Lead Co., Inc.* (No. 89-2088P, 1992) (consolidated)(ALJ), which provided:

> It is well established that most employers want to comply with the Act for legal and moral reasons. At the same time, one must recognize that a small percentage of employers place an emphasis on economic considerations. If the penalties assessed are substantially less than money saved by correcting the condition, the economic consideration provides a strong incentive to those employers to ignore the standards. A violator of the standards in such cases tends to enjoy an unfair economic benefit over competitors who have complied with the standards. The employer who proceeds to act in good faith should not suffer from unethical competition.

Judge Oringer explained that the lifting violations he found were not merely willful, but "the willfulness is aggravated by the refusal to abate the hazard that was pointed out long prior to the violations." *Id.*

In the interim since Judge Oringer's decision, we issued our decision in *Arcadian Corp.*, 17 BNA OSHC 1345, 1995 CCH OSHD ¶ 30,856 (No. 93-3270, 1995), petition for review filed, No. 96-60126 (5th Cir. Feb. 29, 1996). In *Arcadian*, we sustained an administrative law judge's holding that penalties on a per employee basis were not available under section 5(a)(1) in that case.

We held that:

> [T]he language and structure of section 5(a)(1), 29 U.S.C. 654 (a)(1), and the Act, supported by the legislative history, leave no doubt that Congress' intent was that a violation of section 5(a)(1) is based on the condition(s) constituting a recognized hazard, not the exposure of each employee thereto.

Id. at 1345, 1995 CCH OSHD at p. 42,913 (footnote omitted). [133]

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[133]We explained:

(continued...)

Accordingly, *Arcadian* provides that we cannot base penalties on the number of employees exposed, but must base them on the condition(s) constituting a hazard. Where the hazard is such that the exposure of individual employees is implicated in its definition, the condition(s) *ipso facto* may support citation and penalty on a per employee basis. Thus, under *Arcadian,* to determine the appropriate basis for violation and penalty, we must examine what the record tells us about the condition(s) of hazard here.

Although in other respects the nature and circumstances of the lifting and "UEMSD" citations may differ, they are both examples of "ergonomics" hazards.[134] We

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[133](...continued)

> The focus of this approach is necessarily on a hazard and its abatement. This is so because the purpose of adjudication is to formulate an 'order' under the Administrative Procedure Act … If the Secretary's argument is accepted, that he is permitted under the statute to cite on a per exposed employee basis for the same condition, the same order addressing the same hazard with identical abatement would then issue eighty-seven times. Though this would certainly raise administrative and legal costs, it would not heighten safety and health in the workplace.

17 BNA OSHC at 1347, 1995 CCH OSHD at p. 42,915 (footnote omitted). We further noted that the definition of "occupational safety and health hazard" in section 3(8) of the Act, 29 U.S.C. § 652(8), refers to "conditions … methods, operations, or processes" and we explained that our precedent has held that a "recognized hazard must be defined to identify 'conditions' or 'practices' over which the employer has control."*Id*. at 1348, 1995 CCH OSHD at p. 42,916 (citing *Pelron Corp.*, 12 BNA OSHC 1835, 1986-87 CCH OSHD ¶ 26,852 (No. 77-2350, 1984)).

We also noted that:

> [I]t is "misleading" to refer to section 5(a)(1) as a restatement of the employer's common law duty because the Act does not compensate individual employees, as does the common law, but rather is "remedial and not punitive in nature."

Id. at 1349, 1995 CCH OSHD at p. 42,917.

[134]Daniel Habes, Industrial Engineer for the Applied Psychology and Ergonomics branch of (continued...)

must therefore consider the nature of ergonomics hazards.[135] "Ergonomics," as defined in a standard medical dictionary, is "[t]he science concerned with how to fit a job to a [person's] anatomical, physiological, and psychological characteristics in a way that will enhance human efficiency and well-being." Taber's *Cyclopedic Medical Dictionary* (17th ed). Thus, the Secretary's witness Dr. Vernon Putz-Anderson explained that an "ergonomic solution" is "designing [the] workplace to fit the people rather than trying to get people to fit the workplace" and that "ergonomics is concerned with . . . how we can design our environment, our workplace, our work station, our tools, to match and meet the capabilities and limitations of the people that are engaged in those jobs." [136]

Consistent with the nature of ergonomics, the record shows that the abatement of the ergonomics hazards here may include a mixture of efforts, some of which are directed at individual workers and some of which are directed at solutions that will apply across the board. In the jargon of ergonomics, these have been referred to as "administrative and engineering controls." A guide edited by Dr. Putz-Anderson explains:

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[134](...continued)
the NIOSH testified that the "area of manual lifting" was one of the "primary ergonomics hazards."

[135]In using this term, I note that "[a]s an adjective or adverb, the word ergonomics implies something favorable . . . . It is a lack of ergonomic consideration that increases risk of discomfort or injury. As a result there is no such thing as an ergonomic disorder because an ergonomically designed job would not have caused such a disorder." J. Steven Moore, *Ergonomics in a Practical Approach to Occupational and Environmental Medicine* 396 (Robert J. McCunney, ed., 2d ed. 1994).

[136]Ergonomics presumes that both individual similarities and differences must be accounted for in the design of preventive measures. Towards this end, anthropometry, a component discipline of ergonomics, "is concerned with measuring the size of the human body and using this information to design facilities, equipment, tools and personal protective equipment (*e.g.,* gloves, respirators) to accommodate the physical dimensions of the user." W . Monroe Keysering & Thomas J. Armstrong, *Ergonomics*, in *Environmental and Occupational Medicine* 1179, 1180 (William N. Rom, M.D., M.P.H., ed., 2d ed. 1992).

Administrative and Engineering Controls

> The recommendations for prevention can be conveniently classified as being either primarily **administrative** (focusing on **personnel solutions) or engineering (focusing on redesigning tools, work stations, and jobs**).
>
> Administrative controls refer to those actions taken by the management or medical staff to limit the potentially harmful effects of a physically stressful job on individual workers. Administrative control is achieved by **modifying existing personnel functions** such as worker training, job rotation, and matching employees to job assignments. In other words, the control actions are focused on the worker ….
>
> By contrast, engineering control focuses on the job or work environment. The aim here is to redesign the job or tool to achieve control over those job factors associated with the onset of CTDs.

(GX 168 at 75). (Emphasis in original).

In sum, because the solutions to ergonomics hazards implicate consideration of workers as individuals, *Arcadian* provides that penalties on a per employee basis may be available. The question arises, however, as to whether a general principle regarding ergonomics hazards should govern in all cases where ergonomics hazards are at issue. In particular, does it matter whether the most plausible abatement method(s), or the one(s) actually taken, do not require individualized treatment of employees? The facts here illustrate the question.

Here, for example, the sugar bag lifting hazards were ultimately abated by means that applied across-the-board to all workers at risk -- the installation of scissors lifts and the reduction of bag weights from 100 to 50 pounds. However, if the initial bag weight had not been so clearly excessive, a solution might have involved more individualized attention. In addition, the Company suggested, but did not require, the use of vests by its employees.

The question was addressed by implication in *Hartford Roofing Co*., 17 BNA OSHC 1361, 1995 CCH OSHD ¶ 30,587 (No. 92-3855, 1995), where we explained:

> We find no merit in the Secretary's claim that many violative conditions that facially constitute a separate violation for each act of noncompliance can be abated by a single act, thereby circumventing the Commission decision in *Caterpillar*. Although many standards that involve multiple violations can be abated by a single action, this does not necessarily result in the circumvention of our decision in *Caterpillar*. For example, 29 C.F.R. § 1910.134 sets forth the requirements for the use of respirators where effective engineering controls are not sufficient to control atmospheric contamination. As long as employees are working in a contaminated environment, the failure to provide each of them with appropriate respirators could constitute a separate and discrete violations [sic]. However, if the employer is able to reduce the level of air contaminants to acceptable levels, that single action would render the standard inapplicable. Nonetheless, the condition or practice at which the standard is directed, within the meaning of section 3(8) of the Act, is not the level of air contamination, but the individual and discrete failure to provide an employee working within a contaminated environment with a proper respirator.

Id. at 1366-67, 1995 CCH OSHD at p. 42,935 (footnote omitted). Consistent with the discussion in *Hartford Roofing*, the possibility that violative conditions can be abated by a single action does not necessarily determine the availability of per employee hazards. Were this the case, the availability of per employee penalties might depend on happenstance, rather than be directed at the underlying nature of a hazard.

In sum, in my view, under *Arcadian*, penalties may be applied on a per employee basis where an ergonomic hazard is present. To conclude as much does not mean that they should be applied in a particular case. That question must be addressed on its own merits. In this case I must respectfully disagree with the Chairman's view that a penalty based on the number of individual employees (21) is appropriate. On the record here, I only find a basis for assessing penalties based on the four types of lifting hazards.

As the Chairman notes, the Secretary sought an "instance-by-instance" penalty in this case because of the claimed egregiousness of the violations. Upon review of the

record I agree with the Chairman that the Secretary has not made a case on this basis for instance-by-instance penalties on the lifting citations.[137]

It is true that the Commission has authority to assess penalties, and need not be deterred solely because it does not embrace a position put forth by the Secretary. However, any initial application of such penalties in a section 5(a)(1) proceeding should be premised on principle(s) that not only fit the facts of the case, but provide minimally requisite guidance for the future as well. I do not believe the Chairman's analysis meets the standard.

The Chairman's position here, as in *Arcadian*, appears to be premised on his view of the importance of the statutory mandate that each employee be protected. I share his view of the importance of that mandate. If the matter were simple, the solution might lie in a rule that the instances of penalty can and must always equal the number of exposed employees. Neither the Secretary nor the Chairman, however, proposes such a rule. Rather, they propose to provide for per employee penalties in some cases, but not others. Thus, the issue here is whether the principle(s) of limitation make sense. To do so, they must reasonably answer at least two questions: l) how do we, and those affected by our decisions, sort out cases that are in the running for per instance penalties from those that are not? and 2) once eligibility for multiple penalties is found, what criteria govern the extent to which they should be applied?

Arcadian, as discussed above, bases the application of instance-by-instance penalties on the condition(s) of the hazard, which implicate directly both the practicalities

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[137]On behalf of the instance by instance penalties, the Secretary presented testimony by Berrien Zettler, Deputy Director of OSHA compliance programs. Mr. Zettler explained that instance by instance penalties are appropriate where a violation is "flagrant" and a source of "outrage"-- involving "multiple fatalities, catastrophes, or serious injuries" or scofflaw behavior. However, the essential examples of such behavior he cited here, such as the numerous surgeries required for carpal tunnel syndrome, do not relate to the lifting violations.

faced by employers and employees in the real world and the remedial goals embodied in the Act.

The Chairman does not appear to rely on the logic of *Arcadian*. Initially, he reiterates his view that per employee penalties are appropriate in this case, because "the employer's failure to protect its employees against recognized hazards manifest[ed] itself through acts or omissions that [were] uniquely individual in nature." *See* 17 BNA OSHC at 1360, 1995 CCH OSHD p. 49,929. Later, he explains that this position need not be relied on here because *Arcadian* is clearly distinguishable from this case. He elaborates:

> While each of the 21 employees…was exposed to the possibility of injury during manual lifting operations, the nature of their exposure was such that it was highly unlikely that more than one employee could be injured as the result of any single incident. Moreover, each employee was exposed to the possibility of back injury while lifting separate loads, of different sizes and shapes, and performing separate actions to lift those loads. Finally, under the circumstances cited, Pepperidge could have eliminated the lifting hazard with respect to a single employee while leaving all of the other employees exposed to lifting hazards; yet no single abatement measure or set of abatement measures could have eliminated the cited hazard with respect to all 21 employees.

With respect, I do not see the principles of policy or patterns of fact in this recitation that would provide needed guidance for the Commission, much less employers or employees. As I read it, the Chairman initially places weight on the fact that one person could be injured without another being injured. Would it make any difference if this were the case, but the setting were otherwise not so " individualized"? For example, a machine or tool with a potentially unsafe mechanism could be used by workers on different shifts, thereby injuring only one employee as the result of each incident, with each of them performing separate actions, perhaps even using it to lift separate loads of different sizes and shapes.[138] If it were undisputed that the repair of the machine does not

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[138]In fact, in this case the employees did not all lift loads "of different sizes and shapes"; (continued...)

require consideration or involvement of any of the individual workers, does this meet the Chairman's test?

Second, the Chairman says that no single abatement remedy could have eliminated the hazard with respect to all 21 employees. Would the result differ if, for example, the only citation here involved the 100 pound bags of sugar (in which case an across-the-board remedy such as 50 pound bags and/or scissors lifts were in order)? Would we be precluded from per instance penalties in that case? (Moreover, does it make a difference if the number of required abatement remedies are, as here, both greater than one but less than the number of employees exposed?) Or is the principle that there need only be a hypothetical possibility that alternative remedies might have been applied to differing members of the population at risk?

I agree that under *Hartford Roofing* our determination of the instances of penalty --even in a section 5(a)(1) proceeding -- should not be bound by the happenstance of the abatement remedy ultimately selected. However, section 5(a)(2) standards are matters of public notice, and have been issued only after opportunity for public comment and challenge. It is one thing to hold, as we have in section 5(a)(2) cases such as *Caterpillar, Inc.,* 15 BNA OSHC 2153, 1991-93 CCH OSHD ¶ 29,962, (No. 87-922, 1993), and *Sanders Lead Co.,*17 BNA OSHC 1197, 1993-95 CCH OSHD ¶ 30,740 (No. 87-260, 1995), that a fair reading of such publicly noticed standards leads to per employee penalties. It is another to do so in a case where there has been no noticed standard. In finding, as I would, that there is authority to provide per employee penalties in a section 5(a)(1) case, I might contemplate the possibility of circumstances sufficiently egregious as to provide both reasonable basis for the penalties and its own form of notice to the employer. The question remains where requisite notice and logic lie in the absence of egregiousness.

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[138](...continued)
within each of the four citations the sizes and shapes were uniform.

To be clear, for the reasons noted above, I agree with the Chairman that in concept, and by definition, ergonomic hazards implicate the individual worker. Following the logic of *Arcadian*, there is thus authority (but not requirement) for per employee penalties in ergonomics cases. However, the Chairman, abjuring the *Arcadian* decisional principle, appears to substitute a "you know it when you see it" approach that is less than crystal clear in policy purpose and real world application.[139]

The Chairman does not address at all the second question that requires an answer if we are to apply instance-by-instance penalties here---how do we determine whether per instance penalties that are authorized should actually be applied? My disagreement with the Chairman on this point lies with his apparent view that if a penalty may be applied, it should be.

In any event, the Chairman sees my position as internally inconsistent because the notice provided in a section 5(a)(1) proceeding is not substantially different from that

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[139]At the initial footnote to his views on this issue, the Chairman questions my (in)ability to identify all the circumstances that will govern my determination of whether particular hazards have been properly cited on a per employee basis, and concludes that I therefore cannot be claiming that my "test" is clearer than his "two-pronged" test articulated in *Arcadian*. With due respect, the Secretary has not here argued for a two-prong test and I do not presently see principled bases for defining one; therefore, I do not propose one. In my view, a one-pronged test that may make some sense provides more guidance than a two-pronged test that does not.

As to the first prong, the Chairman and I appear to agree that egregious conduct might be a basis for multiple penalties. As to the second prong, the Secretary, again, has not proposed one here, and the prong proposed by the Chairman, for reasons discussed above, does not cohere (or, perhaps, he proposes two "you know it when you see it" prongs). When and if the Secretary (or the Chairman) proposes an alternative second prong, it can be evaluated on its merit.

Finally, as discussed above, the Chairman and I also place the "prongs" in a different context. In my view, the "condition of hazard" test, as provided for in *Arcadian*, fulfills a gatekeeper function that, rooted in the practical reality of the hazard experienced at the worksite, should provide underlying guidance that is lacking in Chairman Weisberg's structure.

provided in section 5(a)(2) proceeding (where the Commission has provided instance-by-instance penalties in the absence of egregiousness). The Chairman states that he does not see how my views on sections 5(a)(1) and 5(a)(2) can be reconciled. At the most literal level, I do not see a conflict; the test the Chairman proposes for section 5(a)(1) cases is simply not that which we have stated for section 5(a)(2) cases. The test in section 5(a)(2) cases is not, as the Chairman might be read to suggest, stated in terms of "employees." Rather, as *Sanders Lead* states, "[t]he test under *Caterpillar* for the appropriateness of instance-by-instance penalties is whether the language of the standard prohibits individual acts or a single course of action." 17 BNA OSHC at 1203, 1995 CCH OSHD at p. 42,692. In *Sanders Lead,* this test happens to have been satisfied because the standard at issue links discrete actions to individual employees. In other cases the test may be satisfied in the absence of such link. *See, e.g.*, *J.A. Jones Constr. Co*., 15 BNA OSHC 2201, 1991-93 OSHD ¶ 29,964 (No. 87-2059, 1993) (instance-by-instance penalties assessed based on failure to provide fall protection guarding). In either case, section 5(a)(2) standards do more than state a general duty to employees; they provide specific (and publicly noticed) directives to action by which fulfillment of the *Caterpillar* test might, however imperfectly, be gauged.

Finally, the Chairman appears to question my consistency by questioning section 5(a)(2) precedent.[140] Initially, he suggests that my adherence to *Caterpillar* would provide the Secretary with unfettered discretion to cite on a per instance basis. Assuming that "unfettered discretion" were ever in order, its virtues would seem to be greater in the presence of a standard than in its absence; discretion in the presence of a standard might be broad, but it is not clearly unfettered.[141]

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[140]I was not present for *Caterpillar*; in accord with basic principles of our law, I accept it as governing absent appropriate showing to the contrary.

[141]Moreover, the relationship between the Secretary's authority over citations and the (continued...)

Next, the Chairman suggests that anyone concerned with notice should be concerned about the dramatic departure from longstanding policy approved by the Commission in *Caterpillar.* I share the Chairman's concern, but believe that it embodies at least two distinct aspects which require distinct treatment. The Chairman's focus, it appears, is the fairness of a decision that simultaneously endorses a change (or new interpretation) of longstanding policy (or rule) and applies this new policy in the case at hand to one who arguably has been acting without notice of it. I agree that were we inclined to apply instance-by-instance penalties in a section 5(a)(1) proceeding, their applicability to the Respondent would require reflection. Prior to this, however, is the question of whether the principle is clear enough to give notice to future Respondents. For the reasons discussed above, the principle stated in our section 5(a)(2) cases, with its limits, provides a quality of notice that is not present in the Chairman's proposal to apply instance-by-instance penalties here.

IV. ORDER

Accordingly, we:

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[141](...continued)
Commission's authority over penalties, unaddressed in *Caterpillar*, may well command our attention in the future. I note, in this regard, the discussion in Commission Montoya's separate opinion regarding the Commission's authority to group penalties.

(1)affirm 176 recordkeeping violations of 29 C.F.R. § 1904.2(a) as willful, and assess instance-by-instance penalties totaling $289,603.00 (Citation 1, Item 1);

(2) affirm lifting violations of section 5(a)(1) of the Act, 29 U.S.C. § 654(a)(1) as willful, and assess penalties totaling $20,000.00;

(3) vacate 175 alleged willful repetitive motion violations under section 5(a)(1) of the Act and proposed penalties on the ground that the Secretary failed to establish a feasible means of abating the cited conditions (Citation 1, Item 2).

/s/
Stuart E. Weisberg
Chairman

/s/
Daniel Guttman
Commissioner

Date: April 26, 1997

MONTOYA, COMMISSIONER, CONCURRING IN PART AND DISSENTING IN PART:

I dissent from the majority's characterization of these recordkeeping violations as willful and their decision to assess violation-by-violation penalties. I strongly disagree with the majority's conclusion that lifting and repetitive motion are hazards within the meaning of the general duty clause, and dissent from their finding that Pepperidge Farm violated the general duty clause with respect to lifting. Resting as it does on the degree to which the majority finds that Pepperidge Farm complied with abatements urged by an ergonomist, I fear the majority's decision creates broad authority for the Secretary to enforce the general duty clause pursuant to a discipline whose principles and methods are not sufficiently reliable even to be admissible in most courts. **I. RECORDKEEPING VIOLATIONS**

The majority has concluded that Pepperidge Farm demonstrated "a heightened awareness" of the cited recordkeeping requirements and "an indifferent attitude toward OSHA recordkeeping." The majority also claims that this finding satisfies both the Commission's test for willfulness and that of the Third Circuit Court of Appeals, in whose jurisdiction this case arose. In *Frank Irey, Jr., Inc. v. OSHRC*, 519 F.2d 1200 (3rd Cir. 1974), *aff'd en banc*, 519 F.2d 1215 (1975), *aff'd*, 430 U.S. 442 (1977), that court announced its position that:

> Willfulness connotes defiance or such reckless disregard of consequences as to be equivalent to a knowing, conscious, and deliberate flaunting of the Act. Willfulness means more than merely voluntary action or omission-it involves an element of obstinate refusal to comply.

Id. at 1207. The court reaffirmed this statement in *Babcock & Wilcox Co. v. OSHRC*, 622 F.2d 1160, 1165 (3d Cir. 1980), a case in which it reversed a Commission decision finding a willful violation of the general duty clause. In *Universal Auto Radiator Manufacturing Co. v. Marshall*, 631 F.2d 20 (3d Cir. 1980), the court repeated once again that a willful violation is characterized by a "deliberate flaunting of the Act" and an "obstinate refusal to comply." *Id.* at 23. In that case, however, the employer was found to have disregarded OSHA's explicit abatement order regarding the point of operation guards to be used on two multi-ton power presses. The court therefore concluded that a

violation of the applicable machine guarding standard was willful, since the guards OSHA had approved for compliance with the abatement order were later removed in order to maintain production speed.

In *Caterpillar, Inc*, 15 BNA OSHC 2153, 2176, 1991-93 CCH OSHD ¶ 29,962, p. 41,010 (No. 87-922, 1993), the Commission concluded that the Secretary failed to prove that the 167 separately cited recordkeeping violations were willful, even though the facts suggested that the company might have developed certain recordkeeping guidelines in order to avoid wall-to-wall inspection by OSHA. In *Kohler Co.*, 16 BNA OSHC 1769, 1775, 1993-95 CCH OSHD ¶ 30,457, pp. 42,063-4 (No. 88-237, 1994), the Commission again found that instance-by-instance recordkeeping violations were not willful, even though the employer had previously been cited for the same recordkeeping practices and failed to correct them. This case presents no such facts. Unlike *Kohler* and *Universal Auto Radiator,* though OSHA had previously examined the records at this facility, it had *not* cited Pepperidge Farm's Downingtown recordkeeping practices as out of compliance with the applicable standards. And unlike *Caterpillar*, there is no suggestion that Pepperidge Farm developed these recordkeeping practices in order to thwart OSHA enforcement. The majority nonetheless sees "profound recordkeeping shortcomings" on this record.

This Commissioner would prefer to apply the analysis of *Caterpillar* and *Kohler,* and the law of the Third Circuit, as actually written. While the Secretary established that Pepperidge Farm had sufficient knowledge of the cited conditions for the violations to be affirmed, I cannot find a "deliberate flaunting of the Act" or an "obstinate refusal to comply" on this record. As a result, I cannot find these violations to be willful.

Though the majority is correct that the Commission has assessed instance-by-instance penalties in recordkeeping cases, I would not do so here. As authority for their assessment of instance-by-instance penalties, the majority again relies on *Caterpillar* and *Kohler*. As already mentioned, however, the facts in *Caterpillar* suggested that the company might well have developed certain recordkeeping guidelines in order to avoid

wall-to-wall inspection by OSHA, and the employer in *Kohler* had previously been cited for the very same recordkeeping practices and failed to correct them. The rhetorical flourishes of the majority aside, this case does not present the aggravated facts of *Caterpillar* or *Kohler,* and I believe that a single penalty would satisfy the penalty factors set forth in section 17(j) of the Act.[1] The Commission has recognized that the gravity of any recordkeeping violation is necessarily low. *Caterpillar,* 15 BNA OSHC at 1278-79, 1991-93 CCH OSHD at p. 41,012; *Kohler*, 16 BNA OSHC at 1777, 1993-95 CCH OSHD at p. 42,065. Though Pepperidge Farm is a large employer, it is unlike *Kohler* in that it had no prior history of being cited for recordkeeping violations at its Downingtown facility. And Pepperidge Farm is unlike *Caterpillar,* since there is no reason to believe that Pepperidge Farm was acting in bad faith when it failed to record these injuries.

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[1]As I recently observed in *Andrew Catapano Enterprises, Inc.*, 17 BNA OSHC 1776, 1794, 1996 CCH OSHD ¶ 31,180, p. 43,618 (No. 90-0050, 1996) (consolidated) (Montoya dissent), the Commission has long recognized its discretion to assess a single penalty when the Secretary cites multiple violations of the same standard. In *Hoffman Constr. Co.*, 6 BNA OSHC 1274, 1275-76, 1977-78 CCH OSHD ¶ 22,489, p. 27,120 (No. 4182, 1978), the Commission held that the Secretary has the prosecutorial authority to cite an employer for separate, non-duplicative violations of the same guardrail standard. At the same time, over the Secretary's argument to the contrary, the Commission did not disturb the judge's assessment of a single penalty that was based on a grouping of those violations. The Commission concluded that the single penalty assessed by the judge was appropriate, because the judge had properly considered the penalty factors set forth in section 17(j) of the Act. The decision in which we recognized the Secretary's authority to cite recordkeeping violations on an instance-by-instance basis, *Caterpillar*, 15 BNA OSHC at 2173, 1991-93 CCH OSHD at pp. 41,006-7, was specifically premised on *Hoffman*, and two recent Commission decisions have cited *Hoffman* for the proposition that the Commission may group instance-by-instance violations for penalty purposes. *Hartford Roofing Co*., 17 BNA OSHC 1361, 1367, 1995 CCH OSHD ¶ 30,857, p. 42,936 (No. 92-3855, 1995); *Arcadian Corp.,* 17 BNA OSHC 1345, 1352, 1995 CCH OSHD ¶ 30,856, p. 42,920 (No. 93-3270, 1995), *petition for review filed*, No. 96-60126 (5th Cir. Feb. 28, 1996). In any event, the decision to group violations for penalty purposes is nothing more than an exercise of discretion under the Commission's Congressional grant of assessment authority. *See Miniature Nut and Screw Corp.*, 17 BNA OSHC 1557, 1560, 1996 CCH OSHD ¶ 30,986, p. 43,176 (No. 93-2535, 1996).

Indeed, Pepperidge Farm properly questioned whether the symptoms complained of were work-related, and therefore recordable. Furthermore, the record indicates that Pepperidge Farm was only issued one prior recordkeeping citation, and that was not against the Downingtown facility. The record also indicates that Pepperidge Farm has closed the Downingtown facility, thereby eliminating all recordkeeping practices at this facility. Under these circumstances, the penalty factors of section 17(j) of the Act would be sufficiently served by the assessment of a single penalty against Pepperidge Farm for these violations.

II. GENERAL DUTY CLAUSE VIOLATIONS

The one concrete conclusion I can draw from this record, and the numerous extra-record references the parties have made, is that scientific and medical opinion remains widely unsettled as to the threshold levels at which lifting or repetitive motion can present hazards in the workplace. Given the broad disagreement among the "experts" as to the hazards presented by such activities, I cannot find that "hazard(s)," within the meaning of section 5(a)(1) of the Act, 29 U.S.C. § 654(a)(1) ("the general duty clause"), existed at Pepperidge Farm's Downingtown facility.

To establish a violation of the general duty clause, the Secretary must first show that a workplace condition or activity presented a hazard. *See Waldon Healthcare Center*, 16 BNA OSHC 1052, 1060, 1993-95 CCH OSHD ¶ 30,021, p. 41,151 (No. 89-2804, 1993). The Secretary also has the burden to establish the exposure level at which a cited condition presents a hazard. *Kastalon, Inc.*, 12 OSHC 1928, 1931, 1986-87 CCH OSHD ¶ 27,643, p. 35,973 (No. 79-3561, 1986) (consolidated). In *Kastalon*, the Secretary cited the employer under the general duty clause for exposing employees to a potentially carcinogenic chemical. Though the Commission recognized that the evidence strongly suggested the chemical was a human carcinogen, the Commission also stated that "in order to prove the existence of a hazard within the meaning of the general duty clause, the Secretary cannot merely show that there may be some degree of risk to employees. He must show, at a minimum, that employees are exposed to a significant risk of harm." *Id.*

at 1932, 1986-87 CCH OSHD at p. 35,974.[2] Because the Secretary did not establish the exposure level at which the chemical presented a cancer risk, the Commission held that the Secretary failed to prove that a hazard existed in the workplace. The Commission further stated that "to find violations here would go beyond the limited adjudicatory role of the Commission. We would effectively be establishing a permissible exposure limit through the adjudicatory process without regulated industries having the opportunity for input under the Act's notice and comment rulemaking procedures." *Id.* at 1939, 1986-87 CCH OSHD at p. 35,982. Quoting from *Industrial Union Department, AFL-CIO v. American Petroleum Institute,* 488 U.S. 607, 644 (1980), the Commission also recognized that, as a practical matter, administrative adjudication is not the proper forum in which to seek factual "'findings … on the frontiers of scientific knowledge.'" *Id. See also Pelron Corp.,* 12 BNA OSHC 1833, 1835, 1986-87 CCH OSHD ¶ 27,605, p. 35,872 (No. 82-0388, 1986) ("[t]o respect Congress' intent, hazards must be defined in such a way that apprises the employer of its obligations, and identifies conditions or practices over which the employer can reasonably be expected to exercise control"); *Diebold, Inc. v. Marshall*, 585 F.2d 1327, 1335 (6th Cir. 1978) (quoting *Graynard v. Rockford*, 408 U.S. 104, 108 (1972))(laws and regulations must be sufficiently clear to "give the person of ordinary intelligence a reasonable opportunity to know what is prohibited, so that he may act accordingly.")

A recent district court case from the Third Circuit, *Reiff v. Convergent Technologies,* No. 95-3575 (D.N.J. Feb. 28, 1997), typifies the rejection that "ergonomic" theories have received in the courts. The plaintiff in *Reiff* proffered the testimony of two ergonomists, Dr. Hedge and Dr. Goldstein, in support of her claim that her carpal tunnel syndrome was caused by the use of a certain computer keyboard.

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[2]*Cf. Industr.Union Department, AFL-CIO v. American Petroleum Institute,* 488 U.S. 607, 644 (1980)("Congress intended, at a bare minimum, that the Secretary find a significant risk of harm and therefore a probability of significant benefits before establishing a new standard.")

Finding that their principles and methods were not sufficiently reliable under Federal Rule of Evidence 702, the court precluded both ergonomists from testifying. The court relied on *Daubert v. Merrel Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 597 (1993), which states that to be admissible under Rule 702, expert testimony must "rest[] on a reliable foundation . . . based upon scientifically valid principles," and *In Re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717, 741-43 (3d Cir. 1994), *cert. denied,* 115 S. Ct. 1253 (1995), a Third Circuit Court of Appeals decision that applied *Daubert*. Expressing general skepticism regarding the credibility of ergonomists, the court found that Dr. Hedge failed to conduct any analysis of the plaintiff's typing activity or otherwise consider any cause of the plaintiff's condition other than the keyboard (slip op. at 19) and that Dr. Goldstein could only say that unspecified "work activity largely caused" her condition. *Id. at* 20. Commenting on *Geressy v. Digital Equipment Corp.*, No. 94-1427 (E.D.N.Y. jury verdict Dec. 4, 1996), a similar case from the Second Circuit in which a jury that was permitted to hear ergonomic testimony awarded a $5 million verdict, the *Reiff* court sternly criticized the legal system for routinely allowing "partisan expert testimony" to establish scientific propositions that "cause even laymen to gasp in disbelief." *Id.* at 22. *See also Dennis v. Pertec Corp*., 927 F. Supp. 156 (D.N.J. 1996) (citing *Daubert* and *Paoli,* court ruled ergonomists' opinions inadmissable against keyboard manufacturer, as plaintiff could not establish that his scientific theory and technique were reliable).[3]

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[3]Another illustrative case is *Aparicio v. Norfolk & Western Railway Co.*, 874 F. Supp. 154 (N.D. Ohio 1994), *rev'd*, 84 F.3d 803 (6th Cir. 1996). There the plaintiff offered the testimony of an ergonomist to support his claim under the Federal Employers' Liability Act ("FELA") that disorders in his wrists and elbows were caused by cumulative trauma from operating various tools. As in *Reiff* and *Dennis*, the trial court found the ergonomist's testimony inadmissable under Rule 702, as it failed the test of reliability stated in *Daubert,* and granted judgment as a matter of law to the defendant pursuant to Federal Rule of Civil Procedure 50(a). The Sixth Circuit Court of Appeals did not disagree with this analysis. The court did find, however, that cases under the FELA are subject to a special rule that only requires "more than a scintilla" of evidence to defeat a motion under Rule 50(a). Applying this standard to the ergonomist's testimony, the court determined that it did constitute "more

(continued...)

To date, the general duty clause cases presented to the U.S. Court of Appeals for the Third Circuit have involved hazards with threshold levels that, unlike lifting and repetitive motion, are not subject to serious question. In *Brennan v. OSHRC and Canrad Precision Industries*, 502 F.2d 946, 952-3 (3d Cir. 1974), an ungrounded high-voltage service box containing exposed electrical terminals had been left uncovered. Though the court easily found a recognized hazard, it cautioned that "[s]ince the general duty clause is so broad, the evidence to support a charge of violation should be specific and detailed." The court again found a recognized hazard in *Bethlehem Steel Corp. v. OSHRC*, 607 F.2d 871, 875 (3d Cir. 1979), where heavy snow and wind conditions had frozen a mobile crane in its tracks, limited the operator's view, and otherwise exceeded the crane's safe operating limits. In *Babcock & Wilcox Co. v. OSHRC*, 622 F.2d 1160, 1165 (3d Cir. 1980), the court found that standing water left near a steel melt furnace created an explosion hazard that was well known to the employer and his industry.[4]

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[3](...continued)
than a scintilla" of evidence, and therefore reversed and remanded. *But see Dukes v. Illinois Central Railroad Co.*, 934 F.Supp. 939 (N.D. Ill. 1996) (despite FELA's lower standard of proof, court rejected medical doctor's evidence that a railcar inspector's wrist and elbow symptoms were causally related to his job). *See also Bowers v. Northern Telecom, Inc.,* 905 F.Supp. 1004, 1009 (N.D. Fla. 1995) (while recognizing the cautious view courts have taken toward allowing the opinions of ergonomists to establish causation, court nonetheless considered such opinions for limited purpose of avoiding summary judgment).

[4]The argument that ergonomic hazards are not "recognized hazards" within the meaning of the general duty clause was recently made to the First Circuit Court of Appeals in *United States v. Sturm, Ruger & Co., Inc.*, 84 F.3d 1, 5 (1st Cir. 1996). Since the issue on appeal was OSHA's authority to subpoena records, the court decided to "leave for another day the question whether OSHA will ultimately be able to enforce a citation against Sturmco (or anybody else for that matter) on the ground that ergonomic hazards are recognized hazards within the meaning of the Act's general duty clause." *Id.* at 7. The court did, however, recognize that "a debate rages in both legal and medical circles over the dangers posed by, for instance, multiple movement disorders, as well as over the optimum method(s) by which so-called ergonomic hazards can be alleviated." *Id.* at 6.

As demonstrated by the multitude of authorities referred to in the majority's tract, there is great controversy among scientists and medical doctors as to whether, and under what conditions, lifting and repetitive motion can cause injury in the workplace. Given this broad disagreement, the hazards alleged by the Secretary here continue to defy definition. The Secretary has failed for years in her efforts to promulgate an "ergonomic" standard because of her inability to achieve any consensus on the existence or definition of such hazards or the workplace factors that could create them.[5] With specific regard to repetitive motion, the Secretary's witnesses in this case admitted that they could not quantify the number of repetitions that lead to adverse health effects. Dr. Putz-Anderson, then chief of Psychophysiology and Biomechanics at the National Institute for Occupational Safety and Health ("NIOSH"), admitted that "researchers were just beginning to assess the acceptable or safe limits of repetition" at the time of this inspection. Dr. Silverstein, who was to become Special Assistant to Assistant Labor Secretary Joseph Dear, agreed, and further acknowledged that there is "no standard for controlling work-related risk factors" and that there are "virtually no guidelines for a company to use to achieve compliance before citation." In order for the Secretary to establish a violation of the general duty clause, she must show that the cited workplace condition or activity presented a hazard. *Waldon.* To do so, she must establish the exposure level at which the cited condition presents a hazard, *Kastalon,* with evidence that is "specific and detailed," *Canrad*. Since the Secretary has admitted her inability to determine the exposure level at which any of the cited repetitive motion activities presents a hazard, the general duty clause citations alleging these hazards must fail.

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[5]As the parties have noted, these uncertainties eventually led to a congressional prohibition on the promulgation of an ergonomic standard. Pub. L. No. 104-134 (1996). Though this restriction has now been lifted, legislative language has been drafted that would require "peer reviewed scientific study" of the relationship between workplace exposure and various ergonomic injuries by the National Academy of Sciences before OSHA can proceed with its rulemaking. *Bonilla Rider Would Halt OSHA Rule Until Academy of Sciences Completes Study*, 26 BNA OSHR 1307 (March 5, 1997).

Though it is apparent the citations alleging hazards associated with lifting suffer from the same uncertainty, these citations are not so easily resolved on this record. Before the judge, Pepperidge Farm offered no rebuttal of the Secretary's prima facie proof that the cited lifting tasks presented hazards within the meaning of the general duty clause. That proof consisted of opinion from Ms. Teed-Sparling, Pepperidge Farm's corporate ergonomist, together with proof of injuries allegedly caused by those tasks, and certain documents prepared by Pepperidge Farm's workmens' compensation carrier.[6] As a result, the record is silent as to the level of exposure at which lifting can actually become hazardous.

With the appearance of the United Parcel Service ("UPS") as *amicus curiæ,* we are now presented with the argument that Ms. Teed-Sparling's opinions are no more persuasive than those of the other witnesses called by the Secretary. This seems likely, as Ms. Teed-Sparling has no academic background in ergonomics *per se*. More importantly, UPS argues that the Secretary is no better able to establish an exposure limit for the alleged lifting hazards than she is for repetitive motion. In support of this argument, UPS refers us to credible extra-record sources that document the inability of science to determine the level of exposure, either in frequency or amount of weight, at which lifting becomes hazardous. Indeed, UPS tells us that as late as 1995, NIOSH itself remained unable to quantify the amount of risk of harm presented by specific lifting tasks. Given the broad regulatory impact that *any* Commission decision recognizing lifting as a general duty clause hazard is likely to have, I would sever the lifting citations for remand so that all arguments bearing on this issue can be fully developed on the record.[7]

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[6]In finding that the cited lifting tasks presented hazards, the judge did not, as Pepperidge Farm would have us think, rely on the Work Practices Guide for Manual Lifting prepared by the National Institute for Occupational Safety and Health ("NIOSH").

[7]I also strongly disagree with the majority's willful characterization of these general duty clause violations. To support a willful characterization, the Commission requires a showing of "conscious disregard or plain indifference" to employee safety. *Williams Enterp. Inc.,* 13

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III. CHAIRMAN WEISBERG'S SEPARATE OPINION

In his separately stated analysis of the Secretary's citation authority, Chairman Weisberg asserts that the Secretary was authorized to cite Pepperidge Farm under the general duty clause for each of the twenty-one employees exposed to the four different lifting hazards that the Secretary identified at the Downingtown facility. In support of this position, he reintroduces arguments that he made in his dissenting opinion in *Arcadian Corp.*, 17 BNA OSHC 1345, 1356-61, 1995 CCH OSHD ¶ 30,856, pp. 42,924-29 (No. 93-3270, 1995) (Weisberg dissent), *petition for review filed*, No. 96-60126 (5th Cir. Feb. 28, 1996). Correcting the Chairman's misstatement of that decision, the Commission held in *Arcadian* that "the language and structure of section 5(a)(1) . . . and the Act, supported by the legislative history, leave no doubt that Congress' intent was that a violation of section 5(a)(1) is based on the condition(s) constituting a recognized hazard, not the exposure of each employee thereto." *Id.* at 1345-46, 1995 CCH OSHD at p. 42,913. Accordingly, we recognized that the Secretary can only cite an employer for multiple violations of the general duty clause if the citations alleged "different hazards . . . requiring different abatement actions." *Id*. at 1346, 1995 CCH OSHD at p. 42,913.

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[7](...continued)
BNA OSHC 1249, 1256-57, 1986-87 CCH OSHD ¶ 27,893, p. 36,589 (No. 85-355, 1987). The Third Circuit requires a "deliberate flaunting of the Act" and an "obstinate refusal to comply." *Universal Auto Radiator Manufacturing Co. v. Marshall*, 631 F.2d 20, 23 (3d Cir. 1980). Pepperidge Farm employed Ms. Teed-Sparling as an in-house ergonomist, and began adopting her recommendations prior to these inspections. As a result, these violations of the general duty clause cannot properly be characterized as willful. *See United States Steel Corp.*, 12 BNA OSHC 1692, 1704, 1986-87 CCH OSHD ¶ 27,517, p. 35,675 (No.79-1998, 1986) (violations of the Act section 5(a)(1) not properly cited as willful where the company's managers had developed a strategy for dealing with the hazard, thereby negating Secretary's argument that the company had intentionally disregarded the requirements of the Act); *Mobil Oil Corp.*, 11 BNA OSHC 1700, 1700-01, 1983-84 CCH OSHD ¶ 26,699, p. 34,124 (No. 79-4802, 1983) ("[w]here the record reveals that the employer who knew of the hazardous condition took some precautions, even though not entirely effective or complete precautions, to protect the employees, the employer's conduct lacks the element of intentional disregard or plain indifference characterizing willful conduct.")

Since the Secretary alleged only four distinct lifting hazards at Pepperidge Farm's Downingtown facility, I agree with Commissioner Guttman that Commission precedent, as stated in *Arcadian*, allows no more than four general duty clause citations for lifting violations here.

As we also observed in *Arcadian, Id.* at 1349, n.14, 1995 CCH OSHD at p. 42,913, n.14, the number of employees exposed to a violative condition has always been treated as an element of the "gravity of the violation," which is one of the factors we must give "due consideration" when assessing penalties under section 17(j) of the OSH Act, 29 U.S.C. 666(j). *See also Hartford Roofing Co.*, 17 BNA OSHC 1361, 1366, 1995 CCH OSHD ¶ 30,857, p.42,934 (No. 92-3855, 1995) (neither the Act nor the case law authorizes expansion of this penalty factor into the gravamen of the violation). In one of its earliest cases, the Commission decided that "the number of employees exposed to the risk of injury" would be a factor to consider when determining gravity. *National Realty & Constr. Co.,* 1 BNA OSHC 1049, 1051, 1971-73 CCH OSHD ¶ 15,188, p. 20,266 (No. 85, 1972), *rev'd on other grounds*, 489 F.2d 1257 (D.C. Cir. 1973). The Secretary acquiesced in this analysis, eventually including the "number of workers exposed" as a gravity factor in the *Field Operations Manual* (FOM), and her current *Field Inspection Reference Manual* (FIRM).[8] I can find no circuit court decision that questions the practice of finding a violation first and *then* considering the number of employees exposed when assessing a penalty. Yet OSHA Instruction CPL 2.80*, Handling of Cases to be Proposed for Violation-by-Violation Penalties* (October 1, 1990), includes the statement, utterly inconsistent with law and practice, that under the general duty clause, "each employee exposed to the recognized hazard at the time of the violation constitutes a separate violation."[9]

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[8]FOM, Chapter VI, section A(2)(f); FIRM, chapter IV, section (C)(2)(f)(2)(a).

[9]OSHA Instruction CPL 2.80, *Handling of Cases to be Proposed for Violation-by-Violation Penalties* (October 1, 1990), section (H)(3)(d)(3)(b).

Chairman Weisberg would clearly prefer to enforce the Act according to the patently arbitrary *policy* expressed in OSHA Instruction CPL 2.80, rather than adjudicate according to established principles of Commission *law*. However, he provides no principled reason for overruling *Arcadian* and *Hartford Roofing*, nor does he provide a principled reason for overruling the long established Commission precedent and practice of treating the number of employees exposed to a violative condition as a gravity factor. The courts have not tolerated Commission decisions that changed the law upon a simple will to do so. *See Reich v New York State Electric & Gas Corp.,* 88 F.3d 98, 109 (2nd Cir. 1996), *rev'g & remanding* 17 BNA OSHC 1129, 1993-95 CCH OSHD ¶ 30,745 (No. 91- 2897, 1995) (Commission acted arbitrarily and capriciously by departing without explanation from its prior decisions requiring the Secretary to prove the inadequacy of an employer's safety program as part of her case-in-chief); *Graphics Communications Intl. Union, Local 554 v. Salem-Gravure Div. of World Color Press, Inc.*, 843 F.2d 1490, 1493 (D.C. Cir. 1988), *cert. denied*, 489 U.S. 1011 (1989), *rev'g & remanding* 12 BNA OSHC 2143, 1986-87 CCH OSHD ¶ 27,697 (No. 83-509, 1986) (Commission decision departing from established precedent based on "conjecture" that "cannot substitute for a reasoned explanation" vacated as arbitrary and capricious); *Brock v. Dun-Par Engd. Form Co.*, 843 F.2d 1135, 1137-38 (8th Cir. 1988), *rev'g & remanding* 12 BNA OSHC 1949, 1986-87 CCH OSHD ¶ 27,650 (No. 79-2553, 1986) (Commission decision departing from established precedent without announcing a principled reason reversed as arbitrary and an abuse of discretion).[10] Given

[10]*See also Donovan v. Adams Steel Erection, Inc*., 766 F.2d 804, 810 (3rd Cir. 1985), *rev'g & remanding* 11 BNA OSHC 2073, 1984-85 CCH OSHD ¶ 26,976 (No. 77-4238, 1985) (court could "perceive no reasoned basis for the Commission's decision to overrule established precedent."); *Brock v. L.R. Willson & Sons, Inc*., 773 F.2d 1377, 1382 (D.C. Cir. 1985), *rev'g & remanding* 11 BNA OSHC 2182, 1987-90 CCH OSHD ¶ 26,978 (No. 80-

(continued...)

the law as it has developed during the twenty-five years since *National Realty* was decided, an action by Congress will be required before the number of employees exposed to a violative condition can become the basis for separate violations under the Act.

/s/
Velma Montoya
Commissioner

Dated 4-26-97

[10](...continued)
5866, 1984) ("the Commission clearly exceeded its authority by resting its decision on a rationale which is neither principled nor rational.")