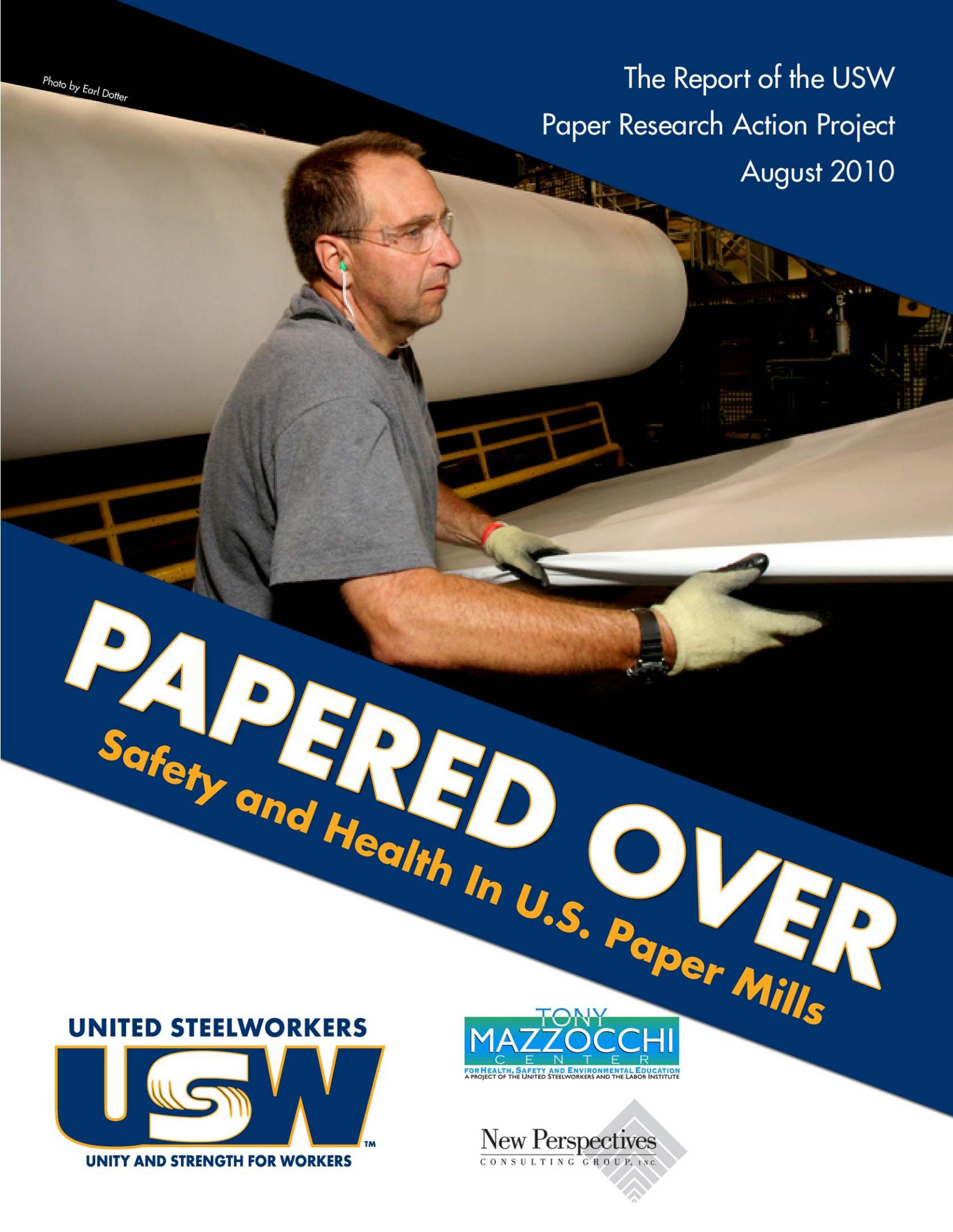


Photo by Earl Dotter

The Report of the USW
Paper Research Action Project
August 2010



PAPERED OVER

Safety and Health In U.S. Paper Mills



Acknowledgements

In the spring of 2008, the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union (USW) initiated the Paper Research Action Project to address the alarming number of fatalities and serious injuries in the U.S. pulp and paper industry. The project was coordinated through the USW-affiliated Tony Mazzocchi Center for Health, Safety and Environmental Education (TMC). We gratefully acknowledge the contributions of all the local unions who participated, and the members of the Project Team:

Leeann Anderson ¹
Kristin Bradley-Bull ²
Tim Chisom ³
Linda Cook ⁴
Jim Frederick ⁵
Paul Footit ⁶
Jon Geenen ⁷
Bill Hoyle ⁴

Nancy Lessin ⁴
Tobi Lippin ²
Tom McQuiston ⁴
Mary Millspaugh ⁸
Gary Morris ⁴
Kim Nibarger ⁵
Dave Ortlieb ⁵
Steve Sallman ⁵

John Scardella ⁴
Ernie Roberge ⁹
Joyce Russotto ¹⁰
Jay Smith ¹¹
Kim Smith ¹²
Mike Wright ⁵
Scott Wright ¹³
Allan Yoder ¹⁴

Names in **bold** indicate current or former paperworkers. Collectively, these 13 current and former workers represent over 250 years of paper plant experience, much of that focused on safety and health issues.

1. USW Assistant to the International President; Pittsburgh, PA
2. New Perspectives Consulting Group, Inc.*; Durham, NC
3. USW Local Union 8-695, Martinsville, VA
4. Tony Mazzocchi Center for Health, Safety and Environmental Education; Pittsburgh, PA
5. USW Health, Safety and Environment Department; Pittsburgh, PA
6. USW District 2 Representative; Menasha, WI
7. USW International Vice President; Pittsburgh, PA
8. USW Local Union 7-154; Newport, IN
9. USW Local Union 4-449; Waterville, ME
10. USW District 2 Staff; Menasha, WI
11. USW Local Union 9-1958; Augusta, GA
12. USW Local Union 9-508; Summerville, SC
13. USW Local Union 2-1324; Appleton, WI
14. USW Local Union 2-01033; Three Rivers, MI

This survey and report were funded by grant number U45 ES06175 from the National Institute of Environmental Health Sciences (NIEHS), NIH. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NIEHS, NIH.

* New Perspectives provides evaluation consulting services for TMC safety and health programs.

Preface

A worker dies in a terrible industrial accident. A family is devastated. Friends and co-workers mourn. The company offers its sincere regrets and pays the workers compensation.

OSHA investigates, finds several violations of legal standards, fines the company a couple of thousand dollars, and orders them to fix the specific hazards that caused the accident. Management contests. Months later the case is settled for a smaller penalty, fewer violations and a less extensive clean-up.

Usually the immediate cause of the accident gets fixed. It will never happen again in that specific way in that specific plant. But the underlying causes – poor work design, indifference to risk, the failure to actively seek out and correct hazards, the refusal to learn from prior accidents and near misses, inadequate training, “safety programs” that cynically blame victims for their own injuries – those causes are papered over. The industry learns nothing.

And so, a week – a month – a year later another worker dies in another mill.

Thirty-three workers were killed in USW represented paper mills and converting plants between January 1, 2005 and July 1, 2010. Some were USW members; others were supervisors, contractors or members of other unions. Their ages ranged from 23 to 65. Four died in explosions; two from scalding; one in a flash fire. Nine were killed by mobile equipment; seven by failures of fixed equipment. Five were killed in falls; two were electrocuted; one was crushed by a roll of paper weighing almost a ton; one died by inhaling poisonous chlorine dioxide; one fell into equipment used to chop and slurry recycled paper. In two additional cases, work was a major contributing factor: one worker apparently fell asleep at the wheel after working a series of 12-hour shifts; another died of a heart attack after being assigned to an unusually strenuous task. The accidents occurred in Maine, Georgia, Massachusetts, Wisconsin, New Jersey, Mississippi, Alabama, Florida, North Carolina, Texas, Arkansas, California, Idaho, Louisiana, Ohio, Indiana, Pennsylvania and Virginia. But if the accidents were all different, in one way they were all the same. They were all preventable.

This report could be a critical first step in the effort to eliminate such accidents forever. The Paper RAP Team is to be commended, not just for the research, but for using the research to recommend concrete measures for improving safety and health throughout the industry. Those recommendations are a call to action by the union. That call must be heeded by union leadership, union staff, and union membership.

It is not enough to say that management bears the legal responsibility for safety and health in our mills. We have a moral responsibility to our union brothers and sisters and to everyone who labors in a USW-represented workplace.

We must never again allow root causes of deadly accidents to be papered over.

Leo W. Gerard
International President, United Steelworkers

Papered Over

Safety and Health in U.S. Paper Mills

The Report of the USW Paper Research Action Project

United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied
Industrial and Service Workers International Union

Pittsburgh

2010

Table of Contents

Acknowledgements	Inside Cover
Preface, by Leo Gerard	i
List of Tables and Appendices	vi
Executive Summary	vii
Death in Paper: A Call to Action	1
The Paper Research Action Project	3
Findings and Recommendations	5
1. Union Involvement in Safety and Health	5
2. Work Design	7
3. Process Safety and Emergency Response	11
4. Combustible and Toxic Dusts	16
5. Machine Guarding and Lockout/Tagout	17
6. Counterproductive Behavioral Safety Programs	19
7. Safety and Health Training	21
Endnotes	22

To save space, the appendices were omitted from most print versions of this report. They can be found at our website, www.usw.org/paperRAP.

Tables

Table 1: Top Four Work Design Issues Making Contributions to Safety and Health Problems	8
Table 2: Frequency of Groups Working More Than 60 Hours/Week	8
Table 3: Highly Hazardous Chemicals and Number of Sites with Quantities Greater than OSHA Process Safety Management (PSM) Standard Thresholds	13
Table 4: Five Most Poorly Rated Safety Systems in Pulping Operations at Chlorine/Chlorine Dioxide Sites	14
Table 5: Percentage of Sites with Unguarded Machine Hazards by Operation	17
Table 6: Frequency With Which Companies Performed Drug Tests or Enforced Discipline for Workers Involved in an Accident	20

Appendices (found at www.usw.org/paperRAP)

A	Fatalities in the USW-Represented Paper Industry: January 2005 – June 2010
B	The Research Approach
C	Site Survey Teams
D	Mill Operations
E	Survey Respondents
F	Findings: Union Involvement in Safety and Health
G	Findings: Work Design
H	Findings: Process Safety and Emergency Response
I	Findings: Combustible and Toxic Dusts
J	Findings: Machine Guarding and Lockout/Tagout
K	Findings: Counterproductive Behavioral Safety Programs
L	Findings: Safety and Health Training

Executive Summary

A Safe and Healthy Workplace—Every Worker’s Right: The Occupational Safety and Health Act requires every employer to provide a place of employment free from recognized hazards and to comply with all applicable OSHA standards. Yet year after year paperworkers continue to die or be seriously injured in the U.S. paper industry. Between January 2005 and June 2010, thirty-five workers lost their lives in USW-represented paper mills and converting plants. On average, one paperworker dies at a USW-represented paper plant every two months. Even more are maimed, crippled, burned or sickened.

The Paper Research Action Project (RAP): To address the serious safety and health problems in paper, the USW created the Paper Research Action Project to survey conditions in USW-represented paper mills. A project team was chosen, with the task of developing and conducting the survey, analyzing the data, and formulating a plan to help build the union’s collective power to stop these recurring tragedies. The team included rank and file paperworkers; senior International Union leaders; staff from USW Health, Safety and Environment Department and the Tony Mazzocchi Center for Health, Safety and Environmental Education; and consultants from New Perspectives Consulting Group.

The paper industry has two distinct segments – pulp and paper mills, which produce the paper itself, and converting plants, which manufacture finished products like corrugated containers, paper cups, and specialty coated paper. The two segments have somewhat different hazards; the Paper RAP Team chose to confine the initial survey to mills. Based on preliminary discussions with union leaders and local unions, and their own collective experience, the Team decided to focus on seven key areas: union involvement in safety and health; work design; process safety and emergency response; combustible and toxic dusts; machine guarding and lockout/tagout; counterproductive behavioral safety programs; and safety and health training. A survey questionnaire was developed and sent to USW paper mill locals in the United States in the summer of 2008. Local union teams at 173 mills returned the RAP surveys, for a response rate of 79%.

This report details the results of the survey – along with recommendations for action – in each of the seven key areas. The findings show an industry that tolerates serious risks to its workers, where the limited safety and health programs that do exist are based on a flawed view of what causes accidents, and are often counterproductive of safety. But there is good news as well. These problems can all be corrected. The survey responses clearly point the way to effective solutions. Paper can be a safe industry. All it will take is commitment and hard work by management, the union and paperworkers themselves.

The Seven Key Areas

- 1. Union Involvement in Safety and Health:** Strong local union safety and health committees are the foundation for the effective identification and correction of workplace hazards. *Union-only* safety and health committees can facilitate strategic

planning, develop and promote the union's agenda, engage members, and influence decision-making. *Joint union-management* committees provide a way for the union committee to meet regularly with management, discuss issues and solve problems in a framework of collective bargaining. For the system to work, the local union must have a strong and independent voice.

Findings: Survey respondents reported: 1) management dominates many joint labor-management safety and health committees, 2) USW local unions have extremely limited involvement at the committee level, and 3) paper locals believe that committee members need more effective training.

Recommendations: Strengthen local union safety leadership through collective bargaining, particularly by promoting the adoption of model safety and health contract language; provide more and better safety and health training for USW local unions and field staff; increase collaboration with our partners in the United Kingdom through our trans-Atlantic union, Workers Uniting. It is especially important to establish strong union-only committees and joint committees in every local union.

2. Work Design

“Work design” refers to how work is organized and managed. It includes things like the pace and complexity of work; the procedures, equipment and steps involved; the skill and effort required; scheduling, hours of work and overtime; how work is evaluated and problems corrected; how maintenance fits in; and how much control individual workers have over the work process. This report focuses on how these impact safety and health. Changes in how management designs and organizes work can lead to an increased risk of occupational injuries and illnesses. For example, the U.S. Chemical Safety Board, the government agency that investigates catastrophic chemical accidents, has identified connections between hours of work, extended shifts, and the risk of major fires and explosions.

Findings: Respondents reported: changes in work design and restructuring are leading to safety and health problems. One particular issue is the increasing tendency of management to work around safety and health hazards or other problems rather than fixing them.

Recommendations: Provide specific training and support to local unions and field staff on work design and how it affects safety and health. Improve the ability of local unions to address work design issues, both in collective bargaining, and between contracts.

3. Process Safety and Emergency Response

“Process safety” is the art and science of preventing fires, explosions, and major releases of dangerous chemicals from tanks, vessels and piping where they are used or stored. Many paper mills use dangerous chemicals in various processes. The Paper RAP analysis focused on two in particular: chlorine gas and chlorine dioxide. Both are used in bleaching. Many mills store them in large quantities. Both can cause severe lung damage; in fact, chlorine was used as a poison gas in World War I. A major release of either would threaten not only plant workers, but also community residents downwind of the release. In the report, mills that use either of these

chemicals in large quantities are called “chlorine/chlorine dioxide mills.” Typically, these mills are covered by two regulations aimed at process safety management – OSHA’s Process Safety Management (PSM) standard, and EPA’s Risk Management Program rule.

Findings: Respondents reported: *For all mills:* More than 40% of mills had large volumes of highly hazardous chemicals and for more than one in three mills this included large volumes of chlorine and/or chlorine dioxide. *For chlorine/chlorine dioxide mills:* Many process safety management systems fell short of what is needed and required by law, and the majority of sites were not fully prepared to respond to an emergency. Most respondents expressed a critical need for additional training on process safety and emergency response.

Recommendations: Promote the use of inherently safer technologies which minimize the storage and use of highly hazardous chemicals. Expand the capacity of USW local unions, members and paper industry employers to prevent, prepare for, and respond to catastrophic chemical accidents through training in process safety and emergency response.

4. Combustible and Toxic Dusts

Wood, pulp and paper dusts are combustible. If enough of the dust gets into the air, it can explode. Recent dust fires and explosions have killed workers, destroyed workplaces, and threatened jobs and communities. In addition, studies of pulp and paperworkers have shown possible links between dust exposures and serious health effects. Wood dust is classified as a human carcinogen.

Findings: Respondents reported that dust was not adequately controlled in many mills.

Recommendations: Through education and written materials, increase local union and management awareness of dust hazards. Work for the creation and implementation of a strong OSHA regulation on combustible dust.

5. Machine Guarding and Lockout/Tagout

Existing OSHA standards for machine guarding and for safeguarding workers maintaining dangerous equipment (“lockout/tagout” or “LOTO”) should provide every worker with seamless protection against machine injuries. However, mutilating machinery-related injuries persist in the paper industry.

Findings: Responding sites reported that unguarded machinery hazards were the norm; workers were repeatedly in danger during threading; and, management did not always ensure LOTO as required.

Recommendations: Through education and written materials, increase local union and management awareness of machine hazards and the need to control them through machine guarding and LOTO. Use the great diversity of the union to apply lessons learned in other industries. Make use of the strong OSHA standards in this area, and file complaints where management refuses to follow the law.

6. Counterproductive Behavioral Safety Programs

The first step toward doing the right thing is usually to stop doing the wrong thing. “Behavioral safety” programs are based on the incorrect belief that most accidents are caused by the behavior of individual workers – specifically “unsafe acts.” No one denies that how workers do their jobs is important, but many behavioral safety programs ignore the basic hazards of the job, and management decisions about whether or how to control those hazards. Some programs try to control behavior by giving workers “incentives” for avoiding injuries, but these programs tend to discourage injury reporting rather than reducing injuries. The same is true of overbroad drug-testing programs – where every worker involved in an accident is tested whether or not there is any indication or even possibility that drugs played a role – and programs that rely primarily on discipline to discourage alleged unsafe behavior. In contrast, effective safety and health programs – the kind promoted by the union – also address working safely. But they employ a much more comprehensive approach focusing on hazard identification, resolution, and prevention through rigorous job safety analysis and the root-cause analysis of accidents, near misses, and system failures.

Findings: Behavior-focused programs are all too common in paper mills. A majority of sites reported: 1) behavioral safety observation programs; 2) incentive programs for time without reports of injuries or illness; and 3) widespread drug tests and/or discipline post-accident or -incident.

Recommendations: Put in place a method for assessing current worksite safety and health programs. Work to implement comprehensive, effective safety and health programs that focus on identifying and reducing hazards, and which help people to work safely by giving them the tools to do so. Work to eliminate programs based primarily on worker “behavior,” programs that discourage accident reporting, and programs that mostly rely on drug testing and discipline.

7. Safety and Health Training

Safety and health depend, not just on workers knowing how to do their jobs, but also on workers’ ability to recognize hazards, deal with unusual or upset conditions, know what to do in risky situations, respond to emergencies, understand the employer’s legal obligations and know how to get help.

Findings: The entire Paper RAP survey can be viewed as a training needs assessment, and many of the previous recommendations address training issues. But the respondents also addressed training as a whole, and overwhelmingly reported a lack of confidence that the workforce had received the necessary training to contribute effectively to mill safety and health.

Recommendations: Evaluate, improve and expand TMC training programs for local unions and staff in the paper industry. Work to improve company training programs through collective bargaining and assistance from the TMC.

Papered Over

Safety and Health in U.S. Paper Mills

Death in Paper: A Call to Action

Bill Bailey was threading a paper machine when it pulled him in and killed him. Jerry Widner was doing his job when a pressure relief valve blew. He fell to his death trying to escape. Alfredo Mota was electrocuted. Stacey Stogner was killed when he was strap-banded to a large paper roll. John Sroka was crushed by a paper roll. Steve Thrasher was scalded to death when a boiler tube ruptured. Otis Collier was severely burned in a flash fire. He died three days later. Charlie Piper was fatally poisoned by chlorine dioxide. Donald Snyder, Steve Voermans and Randy Hoegger were killed when a storage tank exploded. Jerry Evans was fatally pinned between two paper carriers.

Safe and healthy work is a fundamental human right. In the United States, this right is expressed in the Occupational Safety and Health Act:

Each employer - (1) 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; (2) shall comply with occupational safety and health standards promulgated under this Act.¹

Nevertheless, year after year, workers die in U.S. paper mills and converting plants. From January 2005 through June 2010, thirty-five workers lost their lives in the USW-represented paper industry. Many more were crippled, maimed, poisoned or seriously burned. According to the Bureau of Labor Statistics, 15,500 workers in the paper industry suffered recordable injuries in 2008 alone, the last year for which data are available.² For reasons outlined in Part 6 of our Findings and Recommendations, this is probably an underestimate.

As Appendix A shows, the fatal accidents in USW plants happened in different ways, in different mills owned by different companies in different states. But like every occupational fatality and injury, they shared a common feature – they were all preventable.

Of course, the paper industry is not without hazards. Heavy equipment is used at every stage of the process, from the cutting of logs for pulp, to their transport by truck or rail, to the equipment that reduces the logs to chips, to the agitation process that extracts fiber from wood chips and recycled paper, to the enormous machines that form the basic product, to the equipment that transports it to other processes which form it into cardboard and cups and newsprint and a thousand other final products. Many paper processes also use highly toxic chemicals. At almost every stage workers can potentially be struck by mobile equipment, pulled into machinery, struck by heavy objects, poisoned by dangerous chemicals, burned by combustible dusts.

Yet the probability that any of these hazards will result in an accident – the risk – can be reduced or eliminated through a properly functioning safety and health program, with the full involvement of workers and their representatives, based on a corporate culture that values safety over production. This report details specific ways in which the paper industry is failing to meet its obligation to provide a safe

and healthy workplace, and gives recommendations for creating a much safer industry. But it will not happen unless management is willing to accept change – and the union is willing to fight for it.

The Paper Research Action Project

On April 1, 2005, the Paper, Allied Industrial, Chemical and Energy Workers International Union (PACE) merged with the United Steelworkers of America to create North America's largest industrial union, the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied industrial and Service Workers International Union (USW). PACE was itself the product of an earlier merger between the United Paperworkers International Union (UPIU) and the Oil, Chemical and Atomic Workers. The 2005 merger gave the new union the ability to compare wages, benefits, working conditions and safety across many industrial sectors – and the strength to fight for improvements. Union leadership quickly realized that, despite decades of heroic efforts by UPIU and PACE, paper was one of the USW's most dangerous industries.

To address the serious safety and health problems – as well as other issues – in paper, the USW ramped up its collective bargaining program. The USW Health, Safety and Environment Department adopted and expanded the PACE Emergency Response Program, which assists in the investigation of all fatal and many critical injuries, and attempts to uncover their root causes.³ These measures helped, but more was needed. So in late 2007, the USW created the Paper Research Action Project (RAP) to explore the underlying factors behind the high rate of injury and death in the paper industry. A team was chosen to implement the project; members are listed on the inside cover. Team members come from every level of the union, from elected International Union Leadership, to full-time union staff, to shop-floor paperworkers. The team includes members with extensive experience in the paper industry, and those with a more general knowledge of safety. Most are members of the union; some are also employees of the union; others are on the staff of the USW's Tony Mazzocchi Center for Health, Safety and Environmental Education (TMC); two are consultants from New Perspectives Consulting Group, which provides program evaluation and other services to the TMC. The project was funded partly by the USW, and partly by a grant from the National Institute for Environmental Health Sciences.

In 2007, a similar team produced a comprehensive study of safety in U.S oil refineries, based on a survey of USW local unions in the oil industry.⁴ The Paper RAP Team decided to undertake a similar survey in the paper industry. The survey was designed through a participatory process involving the entire team. This approach was essential to producing a useful and scientifically sound survey instrument. Paperworkers knew what questions were important. Safety experts knew how to group the questions to illustrate areas of concern. Survey experts knew how to ask the questions in a scientifically sound way.

The team decided to focus initially on pulp and paper operations. Some of the finished paper goes directly to consumers, but much of it goes to converter plants, which use it to make paper products like containers, corrugated boxes, paper cups, and tissues. Converter plants were not included in the initial survey; the team plans to survey them in the future.

For more information on the participatory approach to research, and our research methods, see Appendix B.

The Seven Key Areas: Every industry, every company – indeed, every workplace – has its own set of hazards, and its own approach to safety. To be of any use, a practical survey has to explore common factors. Based on preliminary discussions with union leaders and local unions, and their own collective experience, the Paper RAP Team decided to focus on seven key areas: union involvement in safety and health; work design; process safety and emergency response; combustible and toxic dusts, machine guarding and lockout/tagout; counterproductive behavioral safety programs; and safety and health training. The team assumed that many of the findings would ultimately result in revisions to the TMC’s training programs for paperworkers, so the survey functioned in part as a training needs assessment.

Survey Participation: The USW represents approximately 40,000 workers at 219 pulp and paper mills across the United States. Each mill was sent a single survey to complete. In most cases a single USW local represented workers at the site. Other sites had two or more locals; they were asked to collaborate. The goal was one survey per site, not one per local. Sites were asked to form a site survey team of local union leaders and workers from different operations to provide both factual and subjective information. Appendix C contains more information on the composition of the site survey teams; Appendix D, on the mill operations from which team members were chosen.

The Response Rate: Between August 2008 and January 2009, teams at 173 USW represented mills returned surveys for a response rate of 79%. The size of the hourly workforce at the responding mills was slightly over 30,000. Mills in 32 states and every one of the USW’s ten U.S. districts responded. As might be expected, the number of surveys received regarding any one company was roughly proportional to the number of mills operated by that company. We received four or fewer surveys on about two-thirds of the responding companies; International Paper locals returned 16 surveys; Domtar locals, 9; Georgia Pacific and Smurfit-Stone, 8 each; New Page and Rock-Tenn, 7 each. The survey used the number of paper machines – equipment which actually forms the paper from a slurry of pulp – as a stand-in for the size and production capacity of the mills studied. 27% had one paper machine; 37% had two; 18% had three; 18% had four or more. For more information on the respondents, see Appendix E.

How the Results Were Reported: Completed surveys were collected and tabulated by New Perspectives Consulting Group. This report is limited to the most important findings; additional findings and supplemental materials are in the appendices. In many cases we chose to summarize the results in the following way. Many of the questions asked, for example, if a safety program was “very effective,” “somewhat effective,” “somewhat ineffective,” or “very ineffective.” A more common way to report the results would have been to compare the two highest categories to the two lowest. However, in many cases we decided the proper comparison was between “very effective” and everything else. Safety and health is literally a life and death issue. Few of us would fly in an airplane that was “somewhat” safe. Workers deserve better than “somewhat effective.”

Findings and Recommendations

This section details the findings of the survey in each of the seven key areas, along with background information and recommendations from the Paper RAP Team. The findings are simply a statistical tabulation of the responses we received from the mills that participated. The recommendations flow from the findings. Local union leaders from each of the USW's paper councils examined the preliminary results and worked with the Paper RAP Team to further explore the problems identified in the findings, and determine priorities.

1. Union Involvement in Safety and Health

Strong local union safety and health committees are the foundation for the effective identification and correction of workplace hazards. *Union-only* safety and health committees give union members a place to report problems without fear of management retaliation. They allow the union to decide the importance of different workplace risks and to engage in strategic planning, especially where an employer refuses to correct a serious problem. Most important, they give workers and the union an independent voice in safety and health, and the ability to exercise it. The USW considers union-only safety and health so important that it calls for these committees in its Constitution.⁵

Joint union-management safety and health committees are also important. Typically, the members of the union-only committee are also members of the joint committee, along with their management counterparts. The joint committee provides a forum for the union and management to investigate and discuss safety and health problems, and to work together toward solutions under the framework of collective bargaining. But it is critical that the committee be truly joint, with union members of the committee having the power to co-determine the committee's agenda, investigate problems, put issues on the table, and receive a good-faith response from management. Investigations of accidents, near misses and unsafe conditions should engage both union and management members of the committee. It is critical that the union members of the committee be chosen by the union. In fact, the National Labor Relations Act (NLRA)⁶ prohibits employer domination of workplace safety and health committees, including any employer role in selecting bargaining unit members to serve on these committees.

Survey Findings

Management dominates many joint union-management safety and health committees: 88% of sites reported having a joint labor-management safety and health committee. However, many sites reported that management dominated these committees. In over one in four committees (29%), management played a role in selecting union committee members, even though this is illegal under the NLRA. In particular, union committee members were selected solely by management at 7% of sites and jointly by union and management at 22% of sites. While on average there was equal representation of union members and managers (6 to 7 per committee) on joint labor management safety and health committees, almost half the sites reported

that the joint committees were company chaired (49%), while 37% were jointly chaired. Of the remaining sites, 10% were union chaired and 5% were alternately chaired.

USW local unions have limited meaningful involvement at the committee level: Meaningful local union and member involvement in safety and health is essential for a safe workplace. Therefore, researchers did not consider any ratings of *less than a lot* of meaningful involvement – that is *some, a little, or no* meaningful involvement – to be adequate. Almost three-quarters (74%) of sites reported that USW members on the joint labor-management safety and health committee had *less than a lot* of meaningful involvement in conducting investigations. Almost two-thirds of sites reported *less than a lot* of meaningful involvement in conducting safety and health audits and/or workplace inspections (62%), or in developing recommendations to correct safety and health problems or hazards (64%).

There is strong interest in USW training on building and strengthening effective safety and health committees: 88% of sites said they were *interested (very or somewhat)* in having their local union participate in USW's committee training.

See Appendix F for a full summary of the responses.

Recommendations

Strengthen local union safety leadership through collective bargaining: The USW should commit to helping local unions develop and strengthen their union-only and joint safety and health committees and related structures. In particular, the USW should develop model contract language for the paper industry and make it a priority for negotiations. It is especially important to establish union-only and joint committees in all paper locals.

Provide more and better safety and health training for local unions and field staff: This effort should include helping local unions strengthen their capacities to identify hazards and problems, involve their members in safety and health, devise solutions that lower the risk of injury, and plan a strategy to get management to implement those solutions. Some of this training should be done through classes and publications, particularly those of the USW's Tony Mazzocchi Center; some, through the Health, Safety and Environment Department's day-to-day work with local unions.

Collaborate with paperworkers in the United Kingdom, through Workers Uniting: In 2008 the USW joined with two unions in the United Kingdom to form the first trans-Atlantic union, Workers Uniting. Many of our employers operate in both countries. Closer collaboration will benefit both partners through shared information and strategies, and coordinated campaigns.

2. Work Design

“Work design,” sometimes called “work organization,” refers to how work is organized and managed. It includes things like the pace and complexity of work; the procedures, equipment and steps involved; the skill and effort required; scheduling; hours of work and overtime; how work is evaluated and problems corrected; how maintenance fits in; and how much control individual workers have over the work process. Work design is the sum of all the management actions and practices, deliberate or not, that affect the tasks workers do and how they do them.

Employers throughout the industrialized world are changing how work is organized, in many cases through formal programs such as Lean, Six Sigma, Continuous Improvement, Kaizen and work systems such as the Toyota Production System. These work restructuring programs have been associated with an increased risk of occupational injuries and illnesses. Auto industry studies⁷ have documented consequences for worker safety and health, including “job strain” that is associated with intensified work pace and demands, hypertension and cardiovascular disease. Other studies have shown pulp and paperworkers are at increased risk of heart disease^{8,9,10} and death from heart attack.^{11,12,13} Some of these studies link these conditions to workplace exposures, alone or in combination, including shift work. Changes in work design may affect injuries as well as disease. Common sense tells us that fatigue and increased job demands, like the need to perform several tasks at once, can lead to accidents. A recent U.S. Chemical Safety Board¹⁴ report made a connection between hours of work/extended shifts and the risk of major fires and explosions.

Of course, it is possible to design work to be safer, more humane, and less stressful. But management-driven changes in work design are almost always made with the goal of cutting costs, increasing output per worker and reinforcing management control.

Survey Findings

Work design and restructuring are contributing to safety and health problems: The Paper RAP Team chose eleven work design issues often associated with increased injuries and illnesses. The questionnaire asked whether those issues were major contributors to safety and health problems in the paper mill. A complete summary of the responses can be found in Appendix G. Four issues in particular stood out. More than half the sites reported that three issues – an increased workload or work pace, downsizing and understaffing – were major contributors to safety and health problems in their mills. 45% of sites said that the loss of knowledge and expertise due to job changes was a major contributor. See Table 1.

Table 1: Top Four Work Design Issues Making Contributions to Safety and Health Problems

Work Organization Issue	Level of Contribution		
	Major	Minor	None or does not exist
1. Increased work load, pace of work, production pressures	63%	34%	4%
2. Downsizing or reduction of workforce	54%	30%	16%
3. Understaffing	52%	39%	9%
4. Combining or moving jobs, classifications, or duties resulting in loss of knowledge and expertise	45%	40%	15%

Q. To what extent is each of the below work organization or restructuring issues contributing to safety and health problems at this mill?

Response=173, Missing 4-6% Note: Percents may not add up to 100% due to rounding.

Certain management practices are adversely affecting safety and health:

Sites were asked about the impact on safety and health of certain management practices, including:

- **Work-Arounds:** 61% agreed that management allowed workers to work around safety and health hazards or other problems rather than fixing them (*strongly or somewhat*).
- **Atmosphere of fear around reporting:** 52% agreed that management created an atmosphere of fear around reporting accidents, incidents, and near-misses (*strongly or somewhat*).
- **Extensive overtime:** Respondents reported frequent overtime in excess of 60 hours per week for mill workers. See Table 2.

Table 2. Frequency of Groups Working More Than 60 Hours/Week

Groups of Workers	Percentage of time group worked more than 60 hours/week				
	0%	1-25%	26-50%	51-75%	76-100%
Control Room Operators	18%	45%	18%	14%	5%
Maintenance Workers	12%	45%	21%	17%	6%
Overall hourly workforce (excluding two groups above)	8%	53%	24%	10%	5%

Q. Thinking about each group of workers, in the past 12 months, roughly what percentage of the group frequently worked more than 60 hours per week? Response=173, Missing 6-11% Note: Percents may not add up to 100% due to rounding.

To better understand the magnitude and complexity of how work design issues impact worker safety and health, the analysis examined the 40 sites (nearly one in four) that reported that all four work design issues – increased workload, work pace or production pressures; downsizing or reduction of the workforce; understaffing; and the loss of knowledge or expertise due to job changes – were all making major contributions to safety and health problems. The team labeled these 40 sites “Worst Case Production First” (WCPF) sites because the combination of all four work design issues strongly suggested that management puts production well ahead of safety. Forty-one additional sites reported that at least three of these four work organization issues were making major contributions to safety and health problems at their sites, as well. However, comparisons between the WCPF sites and all other sites present stark differences. Thus, the WCPF grouping may provide insights into more widespread negative impacts of these work design issues on other paper mills.

“Worst Case Production First” sites compared with other sites: Below are some primary areas where WCPF site results differed from other sites.

- **Work-arounds:** 93% of WCPF sites *agreed* that management allowed workers to work around safety and health hazards rather than fixing them (*strongly* or *somewhat*). This was in contrast to 51% of the other sites.
- **Atmosphere of fear around reporting:** 68% of the WCPF sites *agreed* that management created an atmosphere of fear around reporting accidents, incidents, and near-misses (*strongly* or *somewhat*). This compared to 48% at the other sites.
- **Extensive overtime:** Frequent overtime in excess of 60 hours per week was close to universal for WCPF site workers. This was in contrast to other sites.
- **Lack of training:** Respondents at WCPF sites more frequently said they were *less than very confident* that the company provided the training necessary for the hourly workforce to contribute effectively to mill safety and health in the following subject areas:
 - **Identifying and Assessing Hazards:** WCPF sites 88% *less than very confident*; other sites 76%
 - **Hazardous Materials:** WCPF sites 82% *less than very confident*; other sites 61%
 - **Machine Guarding:** WCPF sites 75% *less than very confident*; other sites 58%
 - **Lockout-Tagout:** WCPF sites 59% *less than very confident*; other sites 40%

For additional findings comparing WCPF sites to other sites, see Appendix G.

Recommendations

Provide specific training and support to local unions and field staff on work design and how it affects safety and health: The USW should educate its staff, local union leaders and members about the ill effects of company work reorganization and restructuring on safety and health. Special attention should be given to the 40 of Worst Case Production First sites that identified multiple work design issues as making major contributions to safety and health problems.

Promote the effective use of continuous bargaining and other methods to address work design issues: Work design issues can be part of contract negotiations, but they can also be addressed between contracts. Work design is a legitimate subject for the joint union-management safety and health committee. A few OSHA standards, such as the Process Safety Management Standard, have an indirect impact on work design in the workplaces to which they apply. And under the National Labor Relations Act, the employer has the obligation to bargain over any proposed change in conditions of employment – including changes in work design – when the union requests it. This ongoing, mid-contract interaction between the union and the employer, within the framework of union rights, is known as “continuous bargaining.” Even where the company clearly has the right to make the change, the union can demand to bargain over the impact of the change on its members, for example, how it affects their hours of work and exposure to hazards.

Specifically, the USW should:

- Use mid-contract bargaining rights and build campaigns aimed at preventing harm from proposed changes to the design of work.
- Use impact bargaining in situations where safety and health has been harmed as a result of past or current work restructuring.
- Where applicable, use OSHA’s process safety management standard and related guidelines to oppose or modify past or current work restructuring that increases workplace risks.

To help local unions be successful in using these continuous bargaining approaches, the USW should train and assist field staff with education, sample contract language, and strategic campaign development. The USW should engage paper councils and local union leaders in these same areas. The ultimate aim will be to communicate with and involve members.

3. Process Safety and Emergency Response

“Process safety” is the art and science of preventing fires, explosions and major releases of dangerous chemicals from tanks, vessels and piping where they are used or stored. Events like the 1984 gas release from a chemical plant in Bhopal, India, which killed thousands, or the 2010 BP Deepwater Horizon drill rig explosion in the Gulf of Mexico, which killed eleven workers and ranks as the nation’s worst environmental disaster, are failures of process safety. Process safety is different from “personal safety,” which aims to prevent accidents like trips, falls, and getting caught in machinery. Process safety requires a detailed understanding of all the ways a catastrophic release might occur (sometimes called a “process hazards analysis”), engineering changes to make such a release less likely, excellent inspection and maintenance, good instrumentation, work procedures that allow process operators to quickly shut down runaway reactions, and a strict system for evaluating the impact on safety of any changes to the process, equipment or procedures. Two government regulations govern process safety in the U.S. – OSHA’s Process Safety Management Standard, and EPA’s Risk Management Program. Both are triggered when a facility has more than a threshold quantity of a highly hazardous chemical on site. Because chemicals vary greatly in their hazards, the thresholds are different for different chemicals.

Though international trends in paper pulping and bleaching operations have been moving to safer and more environmentally friendly technologies and chemicals, many U.S. mills continue to use large quantities of highly hazardous chemicals.¹⁵ The most important are chlorine, chlorine dioxide, hydrogen peroxide, fuming sulfuric acid, liquid sulfur dioxide and flammable liquids and gases. A number of these pose significant risks for a chemical catastrophe. This section focuses on two especially dangerous chemicals frequently used in paper mills – chlorine gas and chlorine dioxide. Both are used in pulping and bleaching.

Chlorine can be a pollution threat, even in day-to-day use. An uncontrolled release could be catastrophic. Chlorine is “highly acutely toxic by inhalation.”¹⁶ In fact, chlorine was used as a poison gas in World War I. Chlorine in the air at 10 parts per million (ppm) is immediately dangerous to life and health (IDLH). Chlorine is typically transported to paper mills in 90-ton rail cars. Were such a car to rupture, every worker in the facility would face a serious risk of death, and community residents could be harmed for up to 25 miles downwind.¹⁷

Chlorine use in paper mills has been decreasing in recent decades, primarily because of pollution issues. The most common replacement is chlorine dioxide. Chlorine dioxide is too dangerous to transport undiluted, so it is generated on-site from safer chemicals. Chlorine dioxide is even more toxic than chlorine. Some mills store large amounts of chlorine dioxide; a major release would be as bad or worse than a release of chlorine. While Scandinavian paper mills have decreased chlorine dioxide use in favor of inherently safer alternative chemicals and processes, this has not been the case in the U.S.^{18,19}

EPA’s Risk Management Program (RMP)²⁰ rule requires facilities that have large quantities of certain chemicals to adopt risk management plans, describe possible

worst-case accidents and report their releases of greater than threshold quantities. A 2007 study examined worst-case chemical release scenarios as part of Risk Management Plans submitted to the EPA by 74 paper facilities in 23 U.S. states.²¹ On average, chemicals at each of these mills potentially endangered over 75,000 people who lived in nearby vulnerability zones.”

Pulp and paper mills reported 100 RMP chemical accidents for the period 1999 to 2000.²² Another EPA analysis showed paper and allied products accounted for 79% of all chlorine dioxide releases.^{23,24} These were not worst-case releases. Either they were contained relatively early, or the failed process or equipment did not contain enough chlorine or chlorine dioxide. But they were all failures of process safety, and they all demonstrate the potential for a catastrophic release.

Typically, sites covered by EPA’s RMP rule are also covered by OSHA’s Process Safety Management (PSM) standard (29 CFR 1910.119). This standard, the sister to the RMP rule, focuses on worker safety and health protections where large volumes of highly hazardous chemicals are used.

It is possible to eliminate or greatly reduce the hazard of a catastrophic release. In 2008 a New Jersey paper mill switched its process from using chlorine, brought to the mill and stored in large quantities, to using chlorine dioxide, produced from safer chemicals in small amounts for immediate use, without large-scale storage. The company’s action, prompted in part by the USW local union representing workers at the site, substantially reduced the risk for 1.1 million people working at and living near this mill.²⁵ This is an example of an “inherently safer technology” – where a catastrophic release cannot occur because there is not enough of the hazardous chemical on site at any one time. (However, it is important to remember that “inherently safer” does not mean totally safe. A small release could still occur, endangering workers in the immediate area.)

Process safety management aims to prevent an accident in the first place. But so long as hazardous chemicals are present in the mill, it will be necessary to have an emergency response plan in case an accident does occur. In a study conducted by USW’s predecessor PACE, 33 paper mills were among those that reported substantial risks for a catastrophic event due to a terrorist attack or an unintentional incident. This report also documented deficiencies in worker training in preparedness to both prevent and respond to potentially catastrophic emergencies.^{26,27} A number of OSHA regulations require sound emergency preparedness for paper mills – the PSM Standard, the Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), and standards for emergency action plans and employee alarm systems. If implemented and enforced, these standards should ensure effective emergency preparedness plans and training at all paper sites.

Survey Findings

Large volumes of highly hazardous chemicals exist at many sites: Among all sites in the study, 106 (or 61%) reported having a pulping operation. Among these, 76 respondents reported that their sites were covered by OSHA’s PSM standard. Furthermore among these 76 sites, 60 reported having quantities of chlorine and/or chlorine dioxide above the OSHA PSM threshold. See Table 3.

Table 3. Highly Hazardous Chemicals and Number of Sites with Quantities Greater than OSHA Process Safety Management (PSM) Standard Thresholds

Highly Hazardous Chemical	OSHA PSM Standard Threshold (pounds)	Sites with greater than threshold quantities
Chlorine gas	1,500	23 sites
Chlorine dioxide	1,000	51 sites
Sulfuric acid (fuming, 65% to 80% by weight)	1,000	46 sites
Flammable liquids or gases	10,000	42 sites
Hydrogen peroxide (>52% concentration)	7,500	36 sites
Sulfur dioxide (liquid)	1,000	18 sites

Q. Which chemicals (raw materials, products or byproducts) does this mill have that make it subject to the PSM standard?
Response range=71-75, Missing 16-20%

Because of the potential for catastrophe if released, the following findings focused on the 60 pulp mill sites with quantities of chlorine and/or chlorine dioxide above the OSHA’s PSM standard thresholds. These sites are referred to here as chlorine/chlorine dioxide sites.

Many process safety management (PSM) systems fall short: Respondents at chlorine/chlorine dioxide sites rated a number of safety systems necessary to operate chemical and related processes safely at pulp mills. Many of these systems correspond to key provisions of OSHA’s PSM standard, such as process hazard analyses (PHAs), pre-start-up safety reviews, and mechanical integrity.

Because of the catastrophic potential of these chemicals and the reliance on these systems for protecting worker and community safety and health, any system that was rated *less than very effective* (that is *somewhat effective, somewhat ineffective or very ineffective*) was considered not effective enough.

All systems, with the exception of one, were rated *less than very effective* by a majority of sites. Emergency shutdown and isolation was the only system rated as *very effective* by a majority of sites. The most poorly rated systems are listed in Table 4. To view the ratings of all systems see Appendix H.

Table 4. Five Most Poorly Rated Safety Systems in Pulping Operations at Chlorine/Chlorine Dioxide Sites

Emergency Preparedness and Response System	Level of Effectiveness*	
	Very	Less Than Very
Inspection and testing	15%	83%
Pre-start-up safety reviews	22%	75%
Mechanical integrity of pressure vessels, tanks, pumps, valves, piping, etc.	22%	76%
Operating manuals and procedures	32%	68%
Fire and chemical suppression systems	32%	66%

Q. How effective are each of the following emergency preparedness and response systems at this mill?
 * Note. Don't know responses not included, so percentages may not add up to 100%
 n= from 59 to 60

As with the effectiveness ratings for systems discussed above, the central importance of emergency response for protecting worker and community safety and health is so important that any measure where sites rated confidence in emergency response preparedness as *less than very confident (somewhat confident, somewhat unconfident, very unconfident)* was considered not confident enough. All findings below were similar for PSM sites as a group and all sites in the study. Additional information is available in Appendix H.

A majority of the most hazardous sites are not fully prepared to respond to an emergency: Examining chlorine/chlorine dioxide sites, respondents reported in the following categories:

- **Overall hourly mill population:** 83% of sites were *less than very confident* that the overall hourly mill population was prepared to respond safely to a hazardous materials incident.
- **Mill emergency teams or fire brigades:** 60% of sites were *less than very confident* that emergency-related teams or brigades were prepared to respond safely to a hazardous materials incident.²⁸ In fact, 12% of these sites reported that the facility *did not even have* an onsite team or brigade.
- **Mill emergency action plans:** 73% of sites reported that emergency action plans for the mill site were *less than very effective*.
- **Drills:** 89% of sites rated emergency drills as *less than very effective*. Among these, 11% reported that they *don't have* drills.

Many sites are deficient in emergency response training: Examining chlorine/chlorine dioxide sites, respondents reported in the following categories:

- **Overall hourly mill population:** 31% reported that the overall mill population *had not* received training in the past 12 months on responding safely to serious hazardous materials incidents. 76% of sites reported that the overall mill population needed additional training on preventing hazardous materials incidents. 74% reported needing additional training on responding.
- **Emergency teams or fire brigades:** 2% of sites reported that their emergency-related teams or brigades *had not* received training in the past 12 months on responding safely to serious hazardous materials incidents – 86% *had* received training (the remaining sites reported *not having* emergency teams or fire brigades-see above). However, 53% of sites reported that their emergency response teams needed additional training on preventing incidents. 49% reported that their teams needed additional training on responding to incidents.

Recommendations

Reduce the potential for catastrophic chemical accidents by promoting inherently safer technologies. The USW Health, Safety and Environment Department and the Tony Mazzocchi Center (TMC) should provide information, training, and assistance to build awareness of the potential scope of catastrophic disasters posed by large quantities of highly hazardous chemicals at paper mills. Prevention through the adoption of inherently safer technologies, among other strategies, should be at the center of this effort.

Expand the capacity of USW local unions and members to prevent and respond to catastrophic chemical accidents. The USW Health, Safety and Environment Department and the Tony Mazzocchi Center (TMC) should provide information, training, and education about prevention, preparedness, and response to chemical emergencies. The training should focus on the OSHA Process Safety Management Standard and the EPA Risk Management Program. The TMC should consider expanding this training beyond the union, to emergency responders, local officials, health care workers, and communities. The USW should also provide strategic assistance to local unions to ensure that needed and required management, regulatory, and enforcement systems for emergency prevention, preparedness, and response are in place and followed.

4. Combustible and Toxic Dusts

In recent years workplace dust explosions in a variety of industries have killed workers, destroyed workplaces, threatened surrounding communities, and eliminated many jobs. The National Fire Protection Association (NFPA) has reported that between 2003 and 2006 dust, fiber, lint, sawdust, or excelsior were what first ignited one in ten U.S. industrial structural fires.²⁹ Following a series of catastrophic industrial fires and explosions, the U.S. Chemical Safety and Hazard Investigation Board (CSB) concluded that “combustible dust explosions are a serious hazard in American industry, and that existing efforts inadequately address this hazard.”³⁰ The CSB recommended that OSHA develop a comprehensive combustible dust standard for general industry, and OSHA has begun work on such a standard.

Dried pulp, paper and wood dusts can all be explosive if enough of the material gets into the air. There have been numerous reports of dust explosions and fires in paper manufacturing and related industrial sectors.³¹ Although there is no OSHA combustible dust standard, OSHA can sometimes take action under other standards or the Agency’s general authority, and OSHA recently issued multiple dust-related citations at a paper mill.³²

As this report noted earlier, studies of pulp and paperworkers^{33,34} have shown an increased risk for heart disease and death from heart attack.³⁵ This may be related in part to workplace exposures, including dust. Studies of pulp and paperworkers exposed to high levels of dust have also shown increases in respiratory symptoms and diseases, including decreased lung function, obstructive airway disease, asthma and hypersensitivity reactions.^{36,37,38} In one study, respiratory symptoms improved following the implementation of more effective lime dust controls.³⁹

It has also been suggested that an increased risk for malignant lymphomas among pulp mill workers could be related to exposures to wood dust, terpenes (normal constituents of wood), or preservatives in the wood.⁴⁰ The International Agency for Research on Cancer (IARC) has classified wood dust as a human carcinogen.^{41,42}

Survey Findings

Dust hazards are common: Looking across paper mill operations, 80% to 93% of sites rated systems for controlling dust to prevent inhalation exposures, fires, and dust explosions as *less than very effective*. See Appendix I.

Recommendations

Build Local Union Awareness and Capacity The USW should build awareness of the hazards of paper mill dusts among local unions through TMC training programs and direct support from the Health, Safety and Environment Department. The program should focus on tools locals can use to reduce the risk.

Work to establish a strong OSHA combustible dust standard. The USW should continue to push for a strong combustible dust standard. In the meantime, the USW should make greater use of existing OSHA rights to control hazardous dusts.

5. Machine Guarding and Lockout/Tagout

Existing OSHA standards for machine guarding and for safeguarding workers servicing and maintaining dangerous equipment (“lockout/tagout” or “LOTO”) should provide every worker with seamless protection against machine injuries. However, the OSHA National Emphasis Programs on Amputations⁴³ have repeatedly confirmed the prevalence of mutilating machinery-related injuries in the paper industry. OSHA’s standards for Pulp, Paper and Paperboard Mills⁴⁴ and Machine Guarding⁴⁵ are extensive. In addition, OSHA’s LOTO requirements require machinery to be shut down, deenergized, and locked so that it cannot start up if an employee is required to remove or bypass a safety device or place any part of his/her body into the machine for maintenance or setup. LOTO is also vital in preventing chemical incidents at mills that use large volumes of highly hazardous chemicals.

Machine hazards exist in many industries, of course, and the USW and its predecessor unions have fought for better controls many times in the past. One example comes from the rubber industry, which uses machinery roughly similar to paper machines to mix and form rubber. During the mid 1990’s the United Rubber Workers, and the Steelworkers after its merger with the Rubberworkers, had a major project to improve machine guarding in tire and rubber plants and to more rapidly rescue workers caught in machinery. Much of this experience is relevant to machine hazards in paper.

Survey Findings

Unguarded machinery is common: Roughly three-quarters of sites reported one or more unguarded machine hazards in three paper mill operations. This included 76% in woodyards, 85% in papermaking, and 74% in finishing operations. See Table 5.

Table 5. Percentage of Sites with Unguarded Machine Hazards by Operation

Work area	Number of Unguarded Hazards in Work Area			
	0	1 – 10	11– 49	50 or more
Woodyard	24%	53%	14%	10%
Papermaking	16%	50%	26%	8%
Finishing	26%	60%	12%	2%

Q. Taken together, approximately how many unguarded hazards are there on equipment and machines in the area?

n = 72 for woodyards, 161 for papermaking and 131 for finishing

Missing: 2-9% Note: Percents may not add up to 100% due to rounding.

Workers are repeatedly in danger during threading: Threading or rethreading of machines for new runs, following breakages or for setting up machines is an important and potentially dangerous operation in papermaking and finishing operations. The survey indicates that the risk is not well controlled:

- **Design and engineering for safe threading is often missing:** Sites reported that safe design and engineering for threading was *less than always* present (that is, present *sometimes, rarely, or never*) for 82% of sites in papermaking and 68% of sites for finishing.
- **Workers are often at risk during threading:** Rather than *never*, for papermaking operations, 97% of sites reported that workers threaded or rethreaded machines such that they could be injured *always, sometimes, or rarely*. This figure was 81% for finishing. See Appendix J.

LOTO is not always followed when required: Rather than *never*, between 22% and 44% of sites reported that management *always, sometimes, or rarely* allowed work on machinery and equipment without ensuring that LOTO was in place when required. Similarly, rather than *never*, between 33% and 54% of sites reported that management *always, sometimes, or rarely* allowed the use of less effective measures rather than LOTO. Examples of these less effective methods included interlocks, shut-off of control power (including keyed or selector switches), emergency stops (E-stops), and safety ropes or lines. These findings included all five mill operations focused on in this study. See Appendix J.

Recommendations

Build local union awareness. The USW should provide training to build awareness among paperworkers of machine hazards, machine guarding, LOTO, and OSHA requirements.

Apply the lessons from other industries One strength of a large and diverse union like the USW is that it can apply lessons from one industry to another. In particular, lessons from the campaign for safer machinery in rubber should be applied to the paper industry.

6. Counterproductive Behavioral Safety Programs

The first step toward doing the right thing is to stop doing the wrong thing. “Behavioral safety” programs are based on the incorrect belief that most accidents are caused by the behavior of individual workers – specifically, “unsafe acts.” Many of the programs assume that unsafe conditions are not important, or that management has already corrected unsafe conditions as much as possible. Even where the programs admit the importance of hazardous workplace conditions, implementing behavioral safety leaves little time or money for anything else. For example, workers are sometimes enlisted to observe how jobs are done, but their training and the reports they fill out are designed to record only with behavior, with no place to record hazards.

No one denies that how workers do their jobs is important, but many behavioral safety programs ignore the basic hazards of the job, and management decisions about whether and how to control those hazards. The behavior of workers is the target of these programs – never the behavior of upper level managers who control job design and corporate spending.

Some programs try to control behavior by giving workers “incentives” for avoiding injuries, either positive incentives like a pizza or a raffle ticket for going injury-free, or negative incentives like automatic drug testing or outright discipline for injuries. These programs reduce injury reporting without necessarily reducing injuries. The result is that people work hurt, waiting until the end of the shift before seeking treatment outside the company medical system. The company and the union are denied the chance to investigate the accident, thereby allowing the hazard to persist. Cases are diverted from workers compensation to the overburdened medical insurance system. The incentive not to report injuries is even stronger when the reward is based on group injury rates. Few workers will report an injury if the consequence is that their whole work group loses out.

A recent Congressional report indicated that these types of programs can be used to intimidate workers and inhibit the reporting of hazards, near misses, accidents, injuries, and illnesses.⁴⁶ They can also pit worker against worker and undermine union solidarity.

In contrast, effective safety and health programs – the kind promoted by the union – employ a much more comprehensive approach, focusing on hazard identification, correction and prevention through rigorous job safety analysis and the root cause investigation of accidents, near misses and system failures. They do not contain any elements that discourage reporting. Effective programs also look at how workers do their jobs, but do so in order to remove risk factors like fatigue, conflicting demands, poor instrumentation and lack of control. Most important, effective programs seek to enlist the skill and knowledge of every member of the workforce. Counterproductive behavioral safety programs assume that workers are the *problem*. Effective safety and health programs assume that workers are the *solution*.

The survey examined four aspects of counterproductive behavioral safety programs: 1) behavioral observation programs, where workers generally observe co-workers to identify “unsafe acts;” 2) safety incentive programs, where management provides rewards or prizes to individuals or groups who do not report injuries; 3) post-

accident drug testing; and 4) injury discipline, where workers are threatened with discipline when they report a job injury or illness.

Survey Findings

Counterproductive behavioral safety programs are pervasive:

- **Behavioral observation programs:** A majority of sites (58%, 91 sites) reported the presence of behavioral safety observation programs. These programs had been in place for an average of eight years.
- **Safety incentive programs:** Sites reported on three types of company incentive programs that give prizes or rewards for time without reports of injuries or illness. Most commonly reported were facility-wide incentives where everyone in a facility gets a reward if there are no or few injuries reported. These incentives were in place at 71% of sites followed by department-wide incentives (43%) and individual incentives (24%).
- **Post-accident drug testing and discipline:** Two-thirds or more of sites reported that, after an accident or incident, management *always* or *sometimes* took the following actions: drug tests (72%) and disciplines (66%). See Table 6 and Appendix K.

Table 6. Frequency With Which Companies Performed Drug Tests or Enforced Discipline For Workers Involved With An Accident

	Always	Sometimes	Rarely	Never
Drug tests	41%	31%	13%	15%
Disciplines (including suspends and/or fires)	10%	56%	29%	5%

Note: Percents may not add up to 100% due to rounding

N=163 for drug tests and 168 for disciplining

Recommendations

Push for effective union-driven safety and health programs: The USW Health, Safety and Environment Department and the Tony Mazzocchi Center (TMC) should provide information, training and strategic planning to assist local unions in assessing current workplace safety and health programs; implementing comprehensive programs that focus on identifying and eliminating or reducing hazards; preventing employers from implementing any new counterproductive behavioral safety programs; and removing such programs where they exist. It is especially important for the USW to use the continuous and mid-contract approach bargaining described in the section on job design, and insist on bargaining whenever the employer proposes to introduce a new safety program or modify an old one.

7. Safety and Health Training

Safety and health depend, not just on workers knowing how to do their jobs, but also on their ability to recognize hazards, deal with unusual or upset conditions, respond to risky situations and emergencies, understand their employer's legal and contractual obligations, and know where to get help. Such training ought to be provided at every worksite, by every employer, with full participation by the union.

Another kind of training can come only from the union – training in union rights, effective contract language, collective bargaining strategies, confronting bad programs, strategic planning and, more generally, the knowledge and skills required by local union leaders to effectively represent their members. The Paper RAP survey investigated both types of training.

Survey Findings

Sites lack confidence in employer safety and health training: Some specific training issues were discussed in previous sections. Sites were also asked about more general training needs. Respondents reported being *less than very confident* (*somewhat confident, somewhat unconfident, or very unconfident*) that the hourly workforce had received the necessary training to contribute effectively to mill safety and health on a range of key issues. Sites that were *less than very confident* in training in the following subject areas include:

- Role and application of OSHA standards (84%)
- Identifying and assessing hazards (80%)
- Reporting hazards (71%)
- Hazardous materials (66%)
- Machine guarding (62%)

Appendix L contains the complete results.

There is strong interest in the USW's safety and health training: Consistent with the above findings, 88% of sites said they were *interested* (*very or somewhat*) in having their local union participate in USW's training on effective safety and health committees.

Recommendations

In large measure, this survey was an assessment of USW training needs in the paper industry. The recommendations on training are integrated into the other sections of the report. The USW should work to ensure that all paper locals have access to the many safety and health training programs available from the Tony Mazzocchi Center for Health, Safety and Environmental Education (TMC). The TMC should consider developing programs specific to the paper industry.⁴⁷

Endnotes

- ¹ U.S. 91st Congress, S. 2193, Public Law 91 – 596, December 29, 1970 as amended by Public Law 101-552, §3101, November 5, 1990. (<http://www.usbr.gov/ssle/safety/PublicLaw91-596.pdf>)
- ² <http://www.bls.gov/iif/oshwc/osh/os/ostb2063.txt>. Data for NAICS group 322.
- ³ The program also assists accident victims and their survivors. The Emergency Response Team investigates and assists with 50-70 such accidents each year.
- ⁴ “Beyond Texas City: The State of Process Safety in the Unionized U.S. Oil Refining Industry,” United Steelworkers, 2007.
- ⁵ This had not been the case for members of the United Paperworkers International Union (UPIU) before or after its merger to form the Paper, Allied Industrial, Chemical and Energy Workers (PACE) and prior to the merger to form the USW.
- ⁶ NLRA citation Section 8(a)(2)
- ⁷ Landsbergis PA, Cahill J, Schnall P. 1999. The impact of lean production and related new systems of work organization on worker health. *Journal of Occupational Health Psychology*, 4(2):108-130.
- ⁸ Ischemic heart disease.
- ⁹ Matanoski GM, Kanchanaraksa S, Lees PS, Tao X-G, Royall R, Francis M, et al. 1998. Industry-wide study of mortality of pulp and paper mill workers. *American Journal of Industrial Medicine*, 33:354-365.
- ¹⁰ Langseth H, Kjræheim K. 2006. Mortality from non-malignant diseases in a cohort of female pulp and paperworkers in Norway. *Occupational and Environmental Medicine*, 63:741-745.
- ¹¹ Acute myocardial infarction.
- ¹² Andersson E, Persson B, Bryngelsson I, Magnuson A, Tøren K, Wingren G, Westberg H. 2007. Cohort mortality of Swedish pulp and paper mill workers—nonmalignant diseases. *Scandinavian Journal of Work Environment and Health*. 33(6):30-35.
- ¹³ Karlsson B, Alfredsson L, Knutsson A, Andersson E, Tøren K. 2005. *Scandinavian Journal of Work Environment and Health*. 31(1):30-35.
- ¹⁴ U.S. Chemical Safety and Hazard Investigation Board (CSB) 2007. Investigation Report: Refinery Explosion and Fire (15 Killed, 180 Injured), BP, Texas City, Texas, March 23, 2005, (Washington, D.C., CSB.).
- ¹⁵ These are classified by the U.S. EPA as Risk Management Program (RMP) Sites due the presence of larger than threshold quantities of highly hazardous chemicals.
- ¹⁶ U.S. EPA. 1999. Reregistration Eligibility Decision (RED) Chlorine Gas. EPA738-R-99-001. <http://www.epa.gov/oppsrrd1/REDS/4022red.pdf>
- ¹⁷ Belke, JC. 2000. Chemical accident risks in U.S. industry: A preliminary analysis of accident risk data from U.S. hazardous chemical facilities. Washington, D.C.: United States Environmental Protection Agency, Chemical Emergency Preparedness and Prevention Office
- ¹⁸ U.S. EPA. 2000. Toxicological Review of Chlorine Dioxide and Chlorate. Washington, D.C.: U.S. Environmental Protection Agency, EPA/635/r-00/007). <http://www.epa.gov/iris/toxreviews/0496tr.pdf>
- ¹⁹ Reinstaller A. 2008. The technological transition to chlorine free pulp bleaching technologies: lessons for transition policies. *Journal of Cleaner Production*, 16S1:S133—S147
- ²⁰ U.S. EPA. 1996. 40 CFR Part 68, Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7); List of Regulated Substances and Thresholds for Accidental Release Prevention, Stay of Effectiveness; and Accidental Release Prevention Requirements: Risk Management Programs Under Section 112(r)(7) of the Clean Air Act as Amended, Guidelines; Final Rules and Notice, 61 FR 31668, June 20
- ²¹ Fidis, A. 2007. *Pulp Fiction: Chemical Hazard Reduction at Pulp and Paper Mills*. U.S. PIRG Education Fund: Washington, D.C..
- ²² Kleindorfer PR, et al. 2007. Accident Epidemiology and the RMP Rule: Learning from a Decade of Accident History Data for the U.S. Chemical Industry. Philadelphia, PA: Wharton Risk Management and Decision Process Center, University of Pennsylvania.
- ²³ <http://scorecard.org/>
- ²⁴ Chlorine dioxide is used mostly by the paper industry while chlorine is used mostly by water treatment facilities.

-
- ²⁵ The New Jersey Work Environment Council. 2008. *Millions of New Jerseyans Still at Risk from Toxic Accidents or Attacks*. <http://www.njwec.org/PDF/StillatRiskPressrelease.pdf>
- ²⁶ PACE. 2004. *PACE International Union Survey: Workplace Incident Prevention and Response Since 9/11*. Nashville, TN: Paper, Allied-Industrial, Chemical and Energy Workers International Union. Available: http://hsgac.senate.gov/_files/Erwinattachment.pdf [accessed 21 June 2006].
- ²⁷ Lippin TM, McQuiston TH, Bradley-Bull K, Burns-Johnson T, Cook L, Gill ML, Howard D, Seymour TA, Stephens D, and Williams BK. 2006. Chemical Plants Remain Vulnerable to Terrorists: A Call to Action. *Environmental Health Perspectives*, 114(9):1307- 1311.
- ²⁸ All questions referred to “plant or facility emergency response teams, fire brigades or other emergency teams” and prevention of, or response to “serious hazardous materials incidents or emergencies (fires, explosions, chemical releases).”
- ²⁹ NFPA. 2009. *U.S. Industrial and Manufacturing Property Structure Fires*. <http://www.nfpa.org/assets/files/PDF/IndustrialFactSheet.pdf>
- ³⁰ U.S. Chemical Safety and Hazard Investigation Board, “Combustible Dust Hazard Study,” Investigation Report 2006-H-1, CSB, Washington, D.C. (November 2006).
- ³¹ The Combustible Dust Policy Institute. 2008. *NAICS Awareness ComDust Hazards Alert*. <http://dustexplosions.blogspot.com/2008/11/naics-awareness-comdust-hazards-alert.html>
- ³² U.S. Department of Labor, Occupational Safety and Health Administration, Inspection Number: 313121519, Inspection Dates: 05/12/2009, Issuance Date: 09/22/2009.
- ³³ Matanoski GM, Kanchanaraksa S, Lees PS, Tao X-G, Royall R, Francis M, et al. 1998. Industry-wide study of mortality of pulp and paper mill workers. *American Journal of Industrial Medicine*, 33:354-365.
- ³⁴ Langseth H, Kjørheim K. 2006. Mortality from non-malignant diseases in a cohort of female pulp and paperworkers in Norway. *Occupational and Environmental Medicine*, 63:741-745.
- ³⁵ Andersson E, Persson B, Bryngelsson I, Magnuson A, Tøren K, Wingren G, Westberg H. 2007. Cohort mortality of Swedish pulp and paper mill workers—nonmalignant diseases. *Scandinavian Journal of Work Environment and Health*. 33(6):30-35.
- ³⁶ Torén K, Hagberg S, Westberg H. 1998. Health effects of working in pulp and paper mills: Exposure, obstructive airway diseases, hypersensitivity reaction, and cardiovascular diseases. *American Journal of Industrial Medicine*, 29(2):111-122.
- ³⁷ Torén K, Järholm B, Morgan U. 1989. Mortality from asthma and chronic obstructive pulmonary disease among workers in a soft paper mill: A case-referent study. *British Journal of Industrial Medicine*, 46:192-195.
- ³⁸ Kraus T, Pfahlberg A, Gefeller O, Raithel HJ. 2002. Respiratory symptoms and diseases among workers in the soft tissue producing industry. *Occupational and Environmental Medicine*, 59:830-835.
- ³⁹ Improved nasal clearance among pulp-mill workers after reduction of lime dust. 1996. *Scandinavian Journal of Work Environment and Health*, 22(2):102-107.
- ⁴⁰ Torén K, Persson B, Wingren G. 1998. Health effects of working in pulp and paper mills: Malignant diseases. *American Journal of Industrial Medicine*, 29(2):123-130.
- ⁴¹ International Agency for Research on Cancer (IARC). 1981. Wood, leather and some associated industries. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, VOL 25*. Lyon, France: IARC.
- ⁴² International Agency for Research on Cancer (IARC). 1981. Wood dust and formaldehyde. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, VOL 62*. Lyon, France: IARC.
- ⁴³ CPL 03-00-003 - National Emphasis Program on Amputations (10/27/06). This NEP specifically targets SIC code 2621 Paper Mills as one of the select industries with high Integrated Management Information System (IMIS) numbers coupled with high BLS Amputation Numbers or high IMIS Numbers coupled with High BLS Amputation Rates. (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=3469&p_table=directives)
- ⁴⁴ OSHA General Industry Standards, 29 CFR 1910.261
- ⁴⁵ OSHA General Industry Standards, Subpart O

⁴⁶ Committee on Education and Labor, U.S. House of Representatives, Majority Staff Report. 2008.
“Hidden Tragedy: Underreporting of Work-Related Injuries and Illnesses” released by Congressman
George Miller, Chair of the House Education and Labor Committee.
<http://www.cste.org/dnn/Portals/0/House%20Ed%20Labor%20Comm%20Report%20061908.pdf>

⁴⁷ To see a TMC course catalogue go to: <http://www.uswtmc.org/classes/catalog>. To request a TMC class
go to: <http://www.uswtmc.org/classes/request>