

# METALS INSIGHT

Volume 12 / Issue 6 / March 23, 2017

## Health & safety in steel and raw materials: visible values

**Accident frequencies in steelworks have plunged since reporting was introduced in the 1970s. But stress and other mental health issues remain a concern, while steelmaking raw materials mines are making slower progress**

Steelworks are essentially hostile environments. Employees may be required to work at height and manipulate dangerous substances: dust and emissions are a fact of life; lighting is sometimes dim, surfaces may be dirty or greasy. Still, the drive to improve safety standards is intensifying and even for companies to compete in this field, encouraged by awards and recognition schemes, new regulations including the European Union's emissions reductions policies, and, in countries including China and Brazil, increased public pressure regarding airborne pollution.

In the UK, metalworking still shows a higher incidence of accidents than other manufacturing industries, according to the government's Health and Safety Executive (HSE), while in Japan, members of the Japan Iron and Steel Federation claim to have a significantly lower lost work time frequency rate than Japanese industry as a whole.

Attitudes, guidance and best practices are changing, according to a recent study published by the UK's HSE, in conjunction with the National Association of Steel Service Centres (NASS) and various steelmakers. This establishes that collective

[\(continued on page 2\)](#)

### EDITORIAL COMMENT

Health and safety are now visible values at steel and mining companies, impacting image, share price and credit rating. Mills' safety records have improved dramatically in the past decade, partly due to technology: the World Steel Association reports a fall of 72% in the lost time injury frequency rate between 2005 and 2015. Mining for steelmaking raw materials – often at mines run by steelmakers – nonetheless continues with relatively high fatality rates, often with dramatic accidents with broad environmental impact. The US had 12 coal mine fatalities in 2015 – down from 20 in 2013 and 48 in 2010 – but still a high number for a nation with developed safety regulations. This is costly for companies and for markets: Vale and BHP Billiton face a \$46 billion lawsuit from their Samarco iron ore mine tailings disaster in Brazil in 2015: closure of inefficient and pollutant coking coal mines in China last year contributed to a 300% spike in coking coal prices; an explosion at ArcelorMittal's Abayskaya coal mine in Kazakhstan in 2008, killing 30, led to a multi-year investment to improve equipment, training, ventilation technology and gas warning devices; and Evraz and Severstal have invested heavily following accidents at coal mines in Russia which led to considerable production losses. (see box)

Cost-cutting has been prevalent in recent years: today's "lean" mills and miners need to remember that an effective safety program fully supports success in other areas, according to the US-based Metals Service Center Institute. "Safety is not an expense; it is an investment," says Chris Mart, MSCI vice president. Still, while physical accident rates may be falling, incidences of stress and anxiety in the workplace are not: an area which trade unions and some mills are now starting to tackle.

Steelworks, because of their strategic economic importance, may be targets in politically unstable areas: Ukraine's Yenakiyev works, owned by Metinvest Group – a finalist in the corporate responsibility category for Platts' Global Metals Awards 2017 – was seized by rebels from the Donetsk and Luhansk people's republics this month in a movement which also cut off raw materials supplies to other steelworks: political problems affecting logistics and supplies have also hit steelworks in Libya in recent times. Steelworks including Italian Ilva's Taranto and Brazil's CSN and CSA have been brought to account for exceeding emissions, paid fines and invested in cleaner operations.

The drive to improve and even to compete in safety achievements is on: encouraged by numerous health and safety award schemes emerging worldwide. — [Diana Kinch](#)



Vorkutinskaya mine in Russia, the first of Vorkutaugol's mines that was equipped with the modern gas analytical system Mikon-3. Photo courtesy of Severstal.

## Health & safety in steel and raw materials: visible values

...from page 1

safety should take precedence over individual safety: for instance, if work at height cannot be avoided, collective control measures should always take priority over personal control measures. Collective measures (eg scaffolds, nets, soft landing systems) protect everyone who is at risk rather than offering protection to one individual (eg a harness), it says.

Good housekeeping is key: ladders are out, unless level, stable and secured. Slips and trips are the most common cause of injury at work, according to the HSE/ NASS study, occurring mainly when floors become wet or contaminated and being a particular issue on delivery vehicles. Communication problems with overseas and migrant workers, who are commonly found in the steel industry, including foreign delivery drivers who attend unfamiliar sites, can lead to health and safety risks, according to the report.

### Mental health: an emerging issue

A safer physical environment has not yet resolved an emerging challenge: employees' mental health and stress levels. According

to the UK's HSE, the overall rate of work-related stress, depression and anxiety in the country's manufacturing sector has remained broadly level over the last decade, even though the rate of work-related illness shows an overall downward trend, with the annual average rate for 2013/14 around a quarter lower than in 2003/4, and the rate of musculoskeletal disorders, the single biggest area of illness, falling around 30% over the same period. Currently, around 3% of all workers in the UK manufacturing industry suffer illnesses they believe to be work-related, leading to self-reporting of some 80,000 cases annually, of which 48% relate to musculoskeletal disorders and a massive 31% stress, depression and anxiety, more than half of which are new, rather than recurring cases, according to the HSE.

Unions highlight this challenge: "Health is an issue," said Bob Sneddon of Community, the main UK steel industry union. "Sickness absence and getting people back to work is a significant issue. Support has improved and we're working with managers on drug abuse, mental health and stress....the attitude (to this)

## WHAT IS... THE CLEAN DEVELOPMENT MECHANISM (CDM)?

The Clean Development Mechanism is a United Nations programme under the United Nations Framework Convention on Climate Change (UNFCCC) which allows developed countries (referred to as Annex 1 countries) to invest in emissions reduction projects in developing countries (non-Annex 1 countries) as a cheaper alternative to investing in emissions reductions in their own countries. Projects are awarded a number of Certified Emission Reductions equal to the amount of emissions saved.

has changed significantly. If we have fewer people (in a steelworks) we need to make sure the people there are well."

For Bud Hudspith of the UK's Unite, the UK metals sector has in recent times seen: "a very welcome increased attention to health problems, as opposed to safety problems, with HSE developing a Health at Work Strategy that is focussing on occupational lung disease, workplace stress and musculoskeletal disorders caused by work." A particular area of attention here has been in the foundries sector, with a Castings Health and Safety Advisory Committee (CHASAC) on which Unite is

## S&P Global Platts

### METALS INSIGHT

Volume 12 / Issue 6 / March 23, 2017

ISSN: 2058-749X

#### Editor

Diana Kinch  
+44-20-7176-8390

#### Editor-in-Chief, News

Henry Cooke  
+44-20-7176-7615

#### Head, Translation Services

Anna Norek  
+44-20-7176-3413

#### Global Content Director, Metals

Vera Blei

#### Platts President

Martin Fraenkel

#### Advertising

Tel: +1-720-264-6631

#### Manager, Advertisement Sales

Kacey Comstock

To reach Platts: E-mail: support@platts.com; North America: Tel: 800-PLATTS-8; Latin America: Tel: +54-11-4121-4810; Europe & Middle East: Tel: +44-20-7176-6111; Asia Pacific: Tel: +65-6530-6430

*Metals Insight* is published fortnightly by Platts, a division of S&P Global, registered office: 20 Canada Square, Canary Wharf, London, UK, E14 5LH.

Officers of the Corporation: Charles E. Haldeman, Jr., Non-Executive Chairman; Doug Peterson, President and Chief Executive Officer; Ewout Steenbergen, Executive Vice President, Chief Financial Officer; Steve Kempas, Executive Vice President, General Counsel

**Restrictions on Use:** You may use the prices, indexes, assessments and other related information (collectively, "Data") in this publication only for your personal use or, if your company has a license from Platts and you are an "Authorized User," for your company's internal business. You may not publish, reproduce, distribute, retransmit, resell, create any derivative work from and/or otherwise provide access to Data or any portion thereof to any person (either within or outside your company including, but not limited to, via or as part of any internal electronic system or Internet site), firm or entity, other than as authorized by a separate license from Platts, including without limitation any subsidiary, parent or other entity that is affiliated with your company, it being understood that any approved use or distribution of the Data beyond the express uses authorized in this paragraph above is subject to the payment of additional fees to Platts.

**Disclaimer:** DATA IN THIS PUBLICATION IS BASED ON MATERIALS COLLECTED FROM ACTUAL MARKET PARTICIPANTS. PLATTS, ITS AFFILIATES AND ALL OF THEIR THIRD-PARTY LICENSORS DISCLAIM ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE AS TO THE DATA, OR THE RESULTS OBTAINED BY ITS USE OR AS TO THE PERFORMANCE THEREOF. A REFERENCE TO A PARTICULAR INVESTMENT, SECURITY, RATING OR ANY OBSERVATION CONCERNING A SECURITY OR INVESTMENT PROVIDED IN THE DATA IS NOT A RECOMMENDATION TO BUY, SELL OR HOLD SUCH

INVESTMENT OR SECURITY OR MAKE ANY OTHER INVESTMENT DECISIONS. NEITHER PLATTS, NOR ITS AFFILIATES OR THEIR THIRD-PARTY LICENSORS GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS OR COMPLETENESS OF THE DATA OR ANY COMPONENT THEREOF OR ANY COMMUNICATIONS, INCLUDING BUT NOT LIMITED TO ORAL OR WRITTEN COMMUNICATIONS (WHETHER IN ELECTRONIC OR OTHER FORMAT), WITH RESPECT THERETO.

ACCORDINGLY, ANY USER OF THE DATA SHOULD NOT RELY ON ANY RATING OR OTHER OPINION CONTAINED THEREIN IN MAKING ANY INVESTMENT OR OTHER DECISION. PLATTS, ITS AFFILIATES AND THEIR THIRD-PARTY LICENSORS SHALL NOT BE SUBJECT TO ANY DAMAGES OR LIABILITY FOR ANY ERRORS, OMISSIONS OR DELAYS IN THE DATA. THE DATA AND ALL COMPONENTS THEREOF ARE PROVIDED ON AN "AS IS" BASIS AND YOUR USE OF THE DATA IS AT YOUR OWN RISK.

**Limitation of Liability:** IN NO EVENT WHATSOEVER SHALL PLATTS, ITS AFFILIATES OR THEIR THIRD-PARTY LICENSORS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS, TRADING LOSSES, OR LOST TIME OR GOODWILL, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE.

Permission is granted for those registered with the Copyright Clearance Center (CCC) to photocopy material herein for internal reference or personal use only, provided that appropriate payment is made to the CCC, 222 Rosewood Drive, Danvers, MA 01923, phone (978) 750-8400. Reproduction in any other form, or for any other purpose, is forbidden without express permission of S&P Global. For article reprints contact: The YGS Group, phone +1-717-505-9701 x105. Text-only archives available on Dialog File 624, Data Star, Factiva, LexisNexis, and Westlaw.

© 2017 S&P Global Platts, a division of S&P Global. All rights reserved.

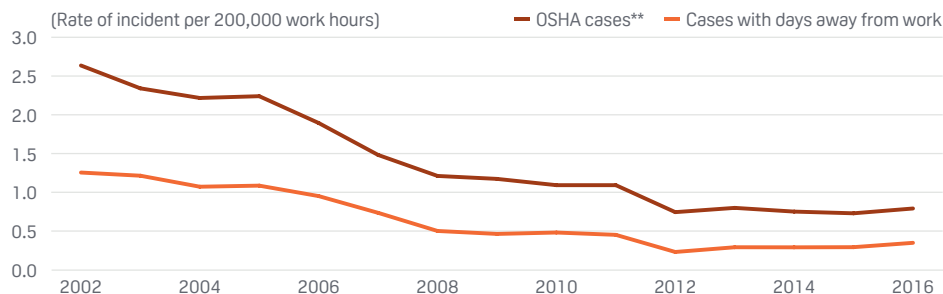
represented, along with HSE, employers and the Cast Metal Federation (CMF), Hudspith says.

“Stress levels and wellness are tracked by some organisations but this is very subjective - absenteeism is tracked by most of our members and analysed as the cause and effect of this,” says worldsteel.

Some major steelmakers are now taking this issue on board: ArcelorMittal claims that despite international recognition of labor and safety standards, accidents, discrimination and unfair treatment in the workplace persist, and gender inequality is considered a major barrier to sustainable development. “While safety regulations have been tightening across the world for some time, in many countries, regulations or voluntary codes now govern a broader range of areas such as the percentage of women on company boards, minimum wage levels, and freedom from harassment at work. We know from our stakeholder analysis that investors, unions, and other influential stakeholders increasingly expect companies to have comprehensive policies covering human rights, equality and diversity, and behaviour in the workplace, and as a result companies need to report publicly on these matters. Campaign groups actively track how well businesses are implementing these policies, and have many channels available to them to expose those that do not live up to those standards,” the company says.

Tata Steel in 2016 launched a Zero Harm initiative for all its steel sites in Europe, aiming to raise awareness on key health and

**OSHA WORKFORCE REPORT 2002-2016\***



\*Occupational Safety and Health Administration, an agent of the US Government Dept of Labor  
 \*\*Days away from work, job transfers, or restriction  
 Source: American Iron & Steel Institute

safety topics including campaigns on noise and asbestos.

At its Trostre site in Wales, Tata has a pioneering cardiovascular screening project, in collaboration with local health authorities, to identify, within the workplace, those most at risk of cardiovascular disease and take steps to help them. To reduce health exposures at its IJmuiden site, the company has invested in structural measures to reduce and prevent exposure to emissions of diesel engines in enclosed areas. Diesel-driven equipment has been replaced where possible, and exhaust gases extracted while some vehicles have been equipped with filters.

**Steel: the available statistics**

In most countries, health and safety legislation is generally enforced at both national level and by local authorities. However, statistics are quite often collected by industry groups.

Worldsteel, which provides health and safety guidance and data to members, has as its main safety and health indicator the Lost Time Injury Frequency Rate (LTIFR): safety data collected from members from 2005 to 2015 show that the steel industry has seen a steady and notable reduction in LTIFR over the past decade, decreasing from 4.15 in 2005 to 1.17 in 2015, a reduction of 72%. The figure is a global average and the LTIFR has decreased in all regions.

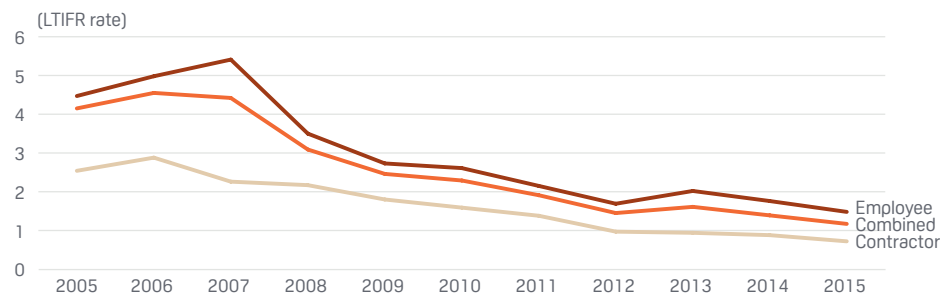
A Lost Time Injury (LTI) is defined as any work-related injury resulting in a company employee, contractor or third party contractor employee not being able to return to work for their next scheduled work period. The LTIFR is calculated as number of LTIs per million hours worked.

“Preventing injuries and illnesses creates a competitive advantage by having our most valuable resource – our people – at work,” says worldsteel’s health and safety specialists Henk Reimink and Anu Hirvonen. “Spending time and resources on a safe environment is not an additional task but part of running a business. Having people at work in a healthy work environment aids productivity of the work and creates an enthusiastic work culture”.

**US – shared task**

In the US, the steel industry shares the federal government’s critical goal of ensuring safety and health at industrial workplaces, according to Thomas J. Gibson, president and CEO of AISI. “Since 2005, U.S. steel producers have achieved a reduction of 70 percent in both the total OSHA (Occupational Safety and Health Administration) recordable injury and illness

**GLOBAL LOST TIME INJURY FREQUENCY RATE (LTIFR)**



Source: Worldsteel

In addition to worldsteel’s LTIFR, a lagging indicator, the association has over 90 leading indicators which track areas of concern. Where the leading indicators do not show improvement or positive change in a specific area then these areas are likely to be the next where injuries may occur. These leading indicators include near miss incident reporting, safety audit completion rates, mitigation completion rates, hazard register reviews and reducing risk levels.

and lost workday case rates. And, since 2002 the steel industry rate of days away from work has declined by 77% vs. a 41% decline for total manufacturing (using 2015 data). The steel industry is a safer place to work than it was in the past, and the companies remain committed to further, continued enhancements and safeguards,” Gibson says.

According to US-based Steel Manufacturers’ Association, SMA, a specialist in the nation’s electric arc furnace sector, compiling and distributing every month a company-by-company report of safety statistics on incidence rates, lost workday rates and injury severity, 2016 was the safest year in the history of North America’s electric-arc furnace steel industry. SMA members established new lows in incidence rate (2.20), lost workday rate (0.44) and severity rate (21.38), all the lowest since the SMA began collecting data almost two decades ago.

For the US iron and steel sector as a whole, incidence rates have improved from approximately 14.00 in 1994 to sustained rates under 3.00 today, SMA said.

“While the improvement in steel industry safety is a terrific success story for North America’s EAF steel industry, there is still work to be done. A continuing challenge is maintaining safety awareness and focus, despite the increasingly rare occurrence of safety incidents.

“I attribute the improvement to a combination of automation, training, programs, procedures, and the collective efforts of steel industry professionals who are committed to safety. Certainly the industry has worked to use technology and engineering to reduce workplace hazards. But continued success also requires a top-down commitment to safety and buy-in throughout the organization,” said Adam Parr, SMA’s vice president of policy and communication.

### UK – metals sector still more dangerous than others

“The UK steel industry is safer because of better regulations since the 1997 Social Chapter and with the UK Corporate Manslaughter Law of 2005 the levels of fines is much higher now,” said Bob Sneddon

## RUSSIAN STEELMAKERS INVEST IN TECHNOLOGY TO IMPROVE H&S AT COAL MINES

A fatal methane explosion at Russia’s largest coking coal mine – Rospadskaya – claimed 91 lives on 8 May 2010 and froze operations at the mine for the next eight months. These large-scale human and material losses – the mine had accounted for 60-65% (7-9 million mt/year) of coal output at the company with the same name – forced Rospadskaya and other miners to invest more attention and money in modernizing accident-prevention technologies and improving workers’ safety.

Rospadskaya set to upgrade the mine’s traditional system of gas drainage from a working seam, which was enhanced with gas drainage from the surface. The venting and air supply system was also made more efficient. After 2010, Rospadskaya renewed its aerogas control system and added a Flexcom wireless communication technology, with emergency notification and staff tracking functions.

The major accident also brought Rospadskaya to adopt the innovative solution (later widely adopted in other mines) of installing a nitrogen plant at the damaged mine to prevent spontaneous coal ignition. The plant was added in 2013, in the same year when the company changed hands, becoming majority owned by Russian steel company Evraz.

Major Russian mining and steel company Severstal has allocated rubles 2.2 billion (\$38 million) in 2017 to enhance health and safety standards at its coking coal mining subsidiary Vorkutaugol in Russia’s Komi Republic. Last year, in the same area of expenditure, it spent a record rubles 2.5 billion (\$43 million at today’s exchange rate), the most Severstal had ever invested in miners’ health and safety. The decision to step up efforts may have been partly prompted by a lethal accident at Severnaya, the largest of Vorkutaugol’s five mines.

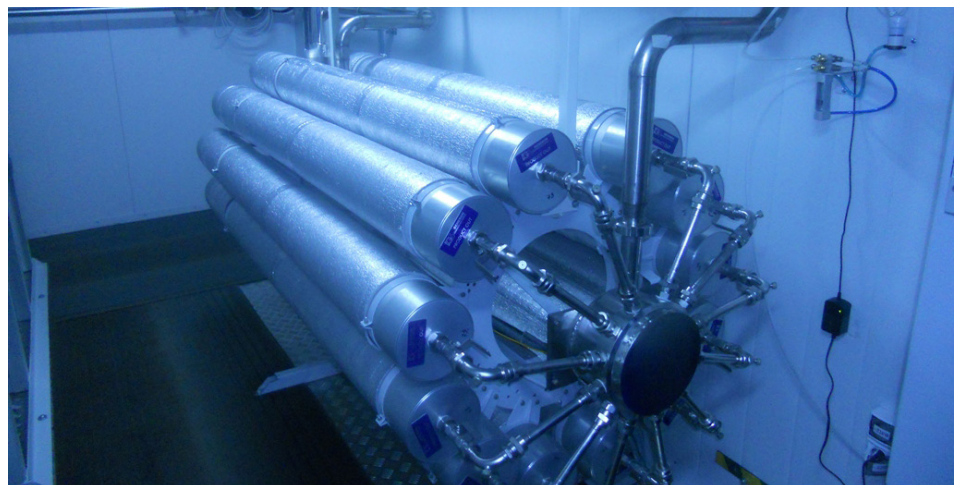
Severnaya suspended operations in February 2016 after several explosions claimed the lives of 36 miners and rescuers. The following permanent closure of the mine wiped off 1.5 million mt/year of the division’s 5.6 million mt washed coal output.

The bulk of this year’s investments is intended for the (re)construction of the three air shafts needed to improve ventilation of Vorkutinskaya, Zapolyarnaya and Komsomolskaya mines and speed up miners’ transportation to and from production sites.

The other key project is the installation (first in one and gradually in the other mines) of a multifunctional safety system. This system will track the whereabouts of miners and equipment within an accuracy of within two meters; continuously monitor aerogas conditions in the mines, reading out data from chips in miners’ safety helmets; introduce Wi-Fi into mines and also enable a talk-back communication between dispatchers and miners whereas now only a dispatcher can send a message to a miner with his head torch. The system will be selected in April, said Severstal.

Vorkutaugol is also enhancing exploration and geophysical surveys of both new and brownfield mine sites with a view to revealing any disturbances in coalbeds which may potentially affect the normal operation of a mine, including its safety. Areas of geological faults may induce rock bursts, intrushes, water and gas breakthroughs and other hazardous phenomena.

In steelmaking, Severstal said it introduced an occupational health and safety management system, certified under international standard BS OHSAS 18001. Regular risk assessment and compliance control resulted in a sharp decline in work-related injuries at the company’s flagship Cherepovets steelworks over the last 12 years: the company told Platts that it managed to reduce the accident rate there to a quarter of previous levels: from 101 instances in 2004 to 24 in 2016. — [Katya Bouckley](#)



Fire fighting machine at Evraz’s Rospadskaya coal mine, Russia. Photo courtesy of Evraz.

of Community trade union. “Companies are working together with trade unions to improve performance and there’s more serious training.”

Numbers of fatalities and the incidence of fatalities in the UK manufacturing industry have plunged since 1974, since when there has been a requirement to report cases of workplace injury to the appropriate authority, with introduction of the Health & Safety at Work Act. Since 1981, reports have been classified using the Standard Industrial Classification, since revised several times.

The rate of all workplace injury in the UK manufacturing industry in 2013/14 was around 40% less than in 2001/02, the Health & Safety Executive, a government department, said on its website. However, the metals sector is one of three occupational areas with “statistically significantly higher rates of workplace injury compared to workers across all occupations,” it said: that is with a greater overall risk than in manufacturing as a whole. The worker fatal injury rate in the manufacturing sector in 2014/15 is 0.55 per 100,000 workers, compared to 0.46 per 100,000 across all industries, the HSE said.

According to data published late 2016 by the HSE, workplace injury in the metallic products sector accounted for 14% of the total injuries reported nationally in the 2012-2015 period.

### China: focus on emissions

In China, observers say that the main focus of health and safety policies has recently been on curbing environmental emissions, amid serious air pollution problems in major urban areas, to which steelworks have contributed - works are occasionally being shut when the government wishes to improve air quality during international events. China’s steel-capacity reduction program is one way to improve the situation: under the ambit of supply-side reforms, unsafe or accident prone facilities have been singled out for closures along with those that don’t meet emissions, technological, size or operational standards, or have the correct authorizations. In coal mining, mines that don’t meet safety standards have also been targeted for closure.

### Japan: low accident rate

The industrial accident rate, an indicator of the frequency of workplace accidents, was an average of 0.34 for Japan Iron and Steel Federation (JISF) member companies in 2014, significantly lower than the average of 1.66 for all industries in that year, the federation reports. However, accidents in the steel industry can be serious because many tasks involve heavy or extremely hot objects or being in high places, it concedes. The JISF established a Safety and Hygiene Promotion Committee in 2006, which facilitates exchanges of information, conducts training programs and other activities to improve safety, it says.

### Black spots

Most of steel’s black spots – certainly those that have gained most media attention - involve air or water pollution, for instance at Ilva’s Taranto works in Italy, CSA and CSN in Brazil. CSA, until recently owned by ThyssenKrupp and Vale, operated for six years without a definitive environmental permit from the Rio de Janeiro state environmental authorities due to emissions problems; its dredging in Guanabara Bay prior to start up in 2010 also attracted widespread protests due to the impact on the local fish population. CSN has been fined on several occasions for polluting the Paraíba do Sul river. In Vietnam, Taiwan-owned Formosa Ha Tinh Steel was allegedly responsible for a chemical spill that killed fish and destroyed marine life along a 200-kilometer stretch of coastline in central Vietnam in April last year.

### Safety: a driver for technological advance

For Ronald E. Ashburn, executive director, Association for Iron & Steel Technology (AIST), “there are two dramatic trends evolving in the steel industry with respect to safety: mindset and technology. The steel industry, as a whole, has worked diligently to instill a safety-first mindset. All accidents are indeed avoidable. Through new technologies, especially smart sensors and robotic automation, the industry has been able to reduce the need for workers to be placed in hazardous environments within the manufacturing plant. Safety has been a significant driver

### WORLDSTEEL SAFETY WHEEL



Source: Worldsteel

Worldsteel’s data collection shows that the top five causes of serious safety incidents in the steel industry are: moving machinery, falling from heights, falling objects, on-site traffic and process safety incidents. Steel Safety Day, which takes place over the course of several weeks but on which members report on 28th April every year, is an industry-wide initiative designed to find the areas of hazards and risks for the top five causes of serious safety incidents at member facilities. Worldsteel requests that all employees and contractors (100% including head office) carry out safety audits at their facilities to develop their hazard register and mitigate these to prevent an injury resulting from the top five causes. It then compiles a summary report of member findings to create a measure for the industry on engagement, hazards identified, hazards mitigated, and timeline to completion, and convenes task forces of industry experts to produce guidance notes on common causes of safety incidents, which members can use for their Steel Safety Day audits. The organization also makes available materials to help members raise awareness. These materials take a different theme each year: the 2017 Steel Safety Day theme is falling objects.

of innovation in many aspects of the steel manufacturing process.”

For example, Ashburn points out that temperature and chemistry sampling of molten metal baths once involved having a person standing near an open ladle or furnace door and manually inserting a lance within very close proximity to 3,000°F temperatures. Now, that work can be safely done with robots, taking their commands from and feeding important data to a human operator working from the safety of a control pulpit.

The AISTech 2017 conference in Nashville, Tennessee in May will showcase advances such as the case of a Canadian steelmaker now deploys camera-equipped drones to perform visual inspections that otherwise would have required an

employee working at height, perhaps on a ladder or in a bucket attached to a crane. In another example, an Indian mill has developed an automated radar-based, anti-collision system for overhead cranes operating in the same horizontal axis but on different vertical axes. The system automatically stops a lower crane from passing below an upper crane that may have lowered hoists, thereby preventing a dangerous collision.

Another innovation is the evolving use of LED lights to improve the awareness of pedestrians who are working in close proximity to mobile equipment or dangerous conditions within the steel plant, such as beneath an overhead crane under load. A LED spotlight casts a light on the floor

ahead of piece of equipment's path of travel. This is much more "visible" than an audible warning siren, which can be helping all personnel quickly and accurately identify the danger zone, the AIST director said.

### **Awards and Programs**

The importance of industry awards, initiatives and programs in upping safety standards cannot be underestimated. Worldsteel's Safety and Health Recognition Programme began in 2008. More than 200 submissions have been made available on the worldsteel extranet for members to use for implementation at their own facilities, demonstrably leading to improvements in safety and health performances. The organization has

over 90 leading indicators available from members, tracking areas of concern, and also carries out shop floor audits. Worldsteel members can share information and raise questions and provide answers using the online Safety Forum.

US-based MSCI last year launched a Safety Excellence program together with the National Safety Council, which aims to offer rewards for company level participation, encouraging members to create formal safety programs in their own companies. The British Safety Council also has an International Safety Award, now in its 59th year, in which steel, metals and mining companies worldwide play a significant part.

— *[Diana Kinch, with the collaboration of Russ McCulloch and Keith Tan](#)*