CHEMICAL ENGINEERING TRANSACTIONS
VOL. 48, 2016
A publication of AIDIC
The Italian Association of Chemical Engineering
Online at www.aidic.it/cet
Guest Editors: Eddy de Rademaeker, Peter Schmelzer

ISBN 978-88-95608-39-6; **ISSN** 2283-9216
DOI: 10.3303/CET1648137

Managing Incidents with SPIRIT

Carola Schock

Wacker Chemie AG, Plant and Process Safety, Johannes-Hess-Str. 24, 84489 Burghausen, Germany
carola.schock@wacker.com

Chemical companies have a long history in hazard prevention. In Europe, statistics show that the chemical manufacturing companies are among the safest employers.
However, many major incidents have shown that a good injury record does not automatically mean that there are no process safety incidents. Careful tracking of process related incidents like spills, leakages, failure of equipment is inevitable to prevent future occurrences.
In order to achieve the goal of continuous improvement, you have to systematically identify risks and trends in your company not only for injuries but also for process related incidents. No easy goal in any company. It is even harder for a company with many sites and employees all over the world.
Since 2014, WACKER uses the worldwide database SPIRIT (based on Enablon). In this database, all kinds of incidents –near misses, first aid cases, injuries and process related incidents are reported. Since then, the quality of data obtained improved considerably. This led to an increased awareness throughout all hierarchy levels which is necessary to continuously improve safety.
This article shows where we came from and how we got to the status we have today. In drawing a comparison to learning a new language it shows the challenges and obstacles along the way.

1. History

In a company with many sites worldwide many reporting systems have developed over the decades. In case of accidents and incidents alone nearly every site had their specific forms reporting work related accidents and incidents with impact on safety or environment. Gathering global data was laborious and many times frustrating as the requested data did not contain the necessary information or was simply not available. In addition to the local forms, corporate EHS functions required monthly data with specific standardized forms for their corporate statistics. Local, divisional and corporate reports were created based on the individually gathered data.
That way, a lot of unproductive double work was created. At that time, no corporate database system was available for worldwide user access, but several local, regional and divisional systems were in place.

2. The goal: manage Audits, Incidents and Metrics in one global and integrated solution

In 2012, a corporate decision was made to develop a solution to replace the majority of existing local databases and reporting tools with one integrated global system.
During the definition of the project scope the following main objectives were identified:
Implement one integrated standard solution, which is compatible with WACKER IT landscape and the option to connect with other systems. That way, available data could be used and imported into the system; users could login into the system without needing additional passwords;
Avoid parallel developments and replace existing systems (e.g. Security reports, SharePoint Audit-solutions, Environmental Information System). Reduce stand-alone systems with different functionalities, layouts and wordings.
Avoid / reduce individual solutions in regions and divisions (e.g. Excel/Access…). Limit double work resulting from different demands and workflows;
Standardize sustainability activities and processes within WACKER.

Please cite this article as: Schock C., 2016, Managing incidents with spirit, Chemical Engineering Transactions, 48, 817-822
DOI:10.3303/CET1648137

Table 1: Extract of the many different forms and reports used internationally

Forms, e.g.	Reports, e.g.	Systems, e.g.
WACKER	WACKER	WACKER
- Adhoc Incident Reporting	- CLICS-Report	- Safety reports (xls)
WCC (USA	- Corporate Safety Statistics	- SIRS (SharePoint)
- OSHA forms 300, 300A, 301	- Overview Accidents	
WGC	- Overview security incidents	
- Incident form	- Overview transport incidents	
	per Region, Site	WCC (USA)
	- Safety reports (Month, Year)	- Incident database (SharePoint)
WGER (Germany)	per GB/ZB, BU/SU, …	BGH
- Unfallanzeige an BG	- Safety reports (Month, Year)	- Neighborhood complaints (SharePoint)
AKE (Japan)	SAG	
- Cause analysis	- Safety performance (Monat)	
- Measures	- Sicherheitsgeschehen	
	AKE	
	- Cause analysis report	
KOL (India)	CGN	
- Incident form	- Overview events VAE	
NJG (China)	NJG (China)	
- Form cause analysis	- Incident overview list	
	- Period without accident	
SAO (Brazil)	PTL (USA)	
Formularion de Analise acidente	- Recordable incidents	
	- Incident spread sheet	

3. The Approach - "Learning a new Language"

Implementing a new mandatory software system all over the world is like trying to teach a new language in a company.

1st Step “Choosing the words”: After agreeing on a system available on the market one of the first steps of customizing is to choose which data would be required on the input masks. Like choosing the kind and amount of words to learn when starting a new language the careful choice of correct expressions is inevitable. Everybody working in an international environment knows that this in itself is a huge challenge. Input parameters like event, incident, accident, impact category, incident classification needed to be defined and trained so that they were understood as intended.

2nd Step “Using the grammar”: In a language, just learning the words in not enough. In order to build sentences, you need to learn syntax and tenses. In our case, the whole process needed to be defined. Questions like

Who puts in the first data of an incident?

Who is authorized to read/to work on the incident?

Who monitors/supports the correct data input?

Who closes out an incident?

needed to be addressed and coordinated with the different users.

These seemingly innocent questions can cause a lot of issues. This type of data handling also needs the agreement of the workers council in Germany. Close scrutiny was given to grant access rights only on a “need to know” basis not a “want to know” request.

3rd Step “Learning to talk”: The reason for learning a new language is to be able to communicate with others, to talk and understand written messages. Our “class” consists of approximately 3000 users in different stages of proficiency! As it is the case with all new topics it takes time and willingness to get used to it. A lot of patience was and is still required from users and administrators to ensure that data is put into the right places and the process is executed as intended. Again differences in culture and a different legal background can lead to varying interpretations. We had some cases where a chemical spill was reported as a near miss incident because there was no impact to people or the environment. Also a substance release can cause one

or several injuries and contamination of air, water and soil. All these impacts would need separate entries within the same incident.

4. The implementation process

As mentioned before, the sites already used specific reports and statistics. Some had little motivation to change. Also customizing a system in a way that it meets the needs of small sites as well as bigger sites with thousands of employees caused uncountable discussions with different stakeholders. In addition, once the decision was made to develop a global database, new and changing demands threatened to exceed the capacity of the project team and the software system. In a huge team effort, SPIRIT - as the system was named - started to take shape in the first half of 2013.
Generally it was Wacker´s approach to stay rather close to the Enablon standard application avoiding customizations/coding as far as possible and change configuration only on the surface. As examples we could mention here:
Adding several fields for different EHS/IMS functions per site, division and corporate function to enable dedicated notification rules
Opportunity to add local and corporate injury classifications (Local/US: First aid; Corporate/Wacker Cat.3 - 0 loss days)
Differ between entity of event and entity of injured person, where reports in US are based on entity event and reports in Germany or Corporate are based on Entity Injured Person
The overall project to implement this Enablon based solution within Wacker took about 3,5 years, where the main project steps were:
Feasibility study to select the appropriate solution
Analysis phase to collect and summarize requirements worldwide
Implement Enablon solution; including reengineering of processes
Global rollout and training

Once SPIRIT was ready for testing, an interdisciplinary team consisting of safety, environment, operations and other support functions started working on the system using test examples. Several workshops were necessary to adopt function and wording to the needs of users.
After the initial rollout in Germany in January 2014 all other global sites were connected in quick succession after intensive trainings of users and administrators.
To achieve the goal of a global solution, a corporate directive was necessary. Based on these instructions authorized by the board, all sites have a mandatory requirement to report their incidents into SPIRIT irrespective of any local reporting system they may use for internal or external reporting to authorities
Soon SPIRIT proved to have some good advantages:
Prompt incident reporting corporate wide:
Sites are required to report bigger incidents within the next workday. That way corporate EHS and management is quickly notified and able to react accordingly. WACKER also uses a process safety indicator based on the CEFIC criteria to monitor process safety performance
Standardized and systematic data input:
Significant improvement of data quality as the system requires mandatory input in certain input fields
Good quality data to analyze for trends:
Data can be analyzed in different directions. That way, trends like the accumulation of incidents of a specific type or in a specific unit or site can be detected and monitored. Improvement measures can be defined more accurately. In addition, effects of these measures like implementation of new standards, directives or programs can be monitored over long periods. That benefits not only local and corporate EHS functions but also enables the business units to look for possible common causes in related operations.
Incident reports contain all necessary data regarding different impacts:
As all impacts (e.g. injury, substance release, and fire) are listed within one incident, long term quick access to all related data is provided in one place.
By providing a tool for all units to track their accidents and incidents in one system, linking them together and enabling units to customize their reports based on their needs, SPIRIT quickly showed its benefits for different users like operation, EHS and management. New or more stringent new safety performance indicators can be added easily to accommodate requirements of global harmonization.

5. What is the experience in 2015, one year after implementation?

Again using our comparison with learning a new language, we have reached a medium level of proficiency. The users have been trained and gained some experience with the system. It still requires some work on ensuring a consistent process from beginning to end. As with all software systems, some necessary improvements only show up after you work with the system for some time. Today, two system administrators also support the users worldwide and coordinate updates and necessary system adaptions.
From the perspective of corporate safety, the quality and quickness of data obtained improved tremendously. A couple of years ago, many incidents that happened internationally did not or belatedly reach the corporate EHS units. Today, information is submitted to concerned parties quickly and support can be given if necessary. As all have access to the same data pool (based on user rights) unnecessary inquiries to the sites can be avoided as the information is already provided.
A very welcome side effect was also the increased awareness in the company over all hierarchies. The continued standardization of statistics and report helped for a better understanding and enabled us to much better look for trends. Did SPIRIT reduce our incidents? Well, maybe not as a system alone. But in combination with the above mentioned benefits and efforts from management, operations, engineering and EHS functions we continue to improve our accidents and incidents rates.

Two examples:

As a member of the German chemical industry association VCI, Wacker Chemie AG committed to provide data regarding process safety relevant incidents based on the “Guidance on Process Safety Performance Indicators” developed and provided by the European Chemical Industry Council CEFIC.
Since 2013 WACKER reports these process safety relevant incidents in number to the German chemical association VCI. A performance indicator PSIR (process safety incident rate) is calculated out of number of PSI (process safety incidents) per 1 million working hours. This performance indicator can be used to benchmark the company’s performance in relation to the chemical industry in Germany and Europe.
Since 2014, incidents meeting the CEFIC criteria are tracked in SPIRIT. The decision was made to use these criteria worldwide to classify incidents. One year later, in 2015 we started to show the performance in the monthly corporate safety report. For the first time, the board also agreed on setting a performance goal. So now the PSIR (process safety incident rate) is one of safety’s key performance indicators.

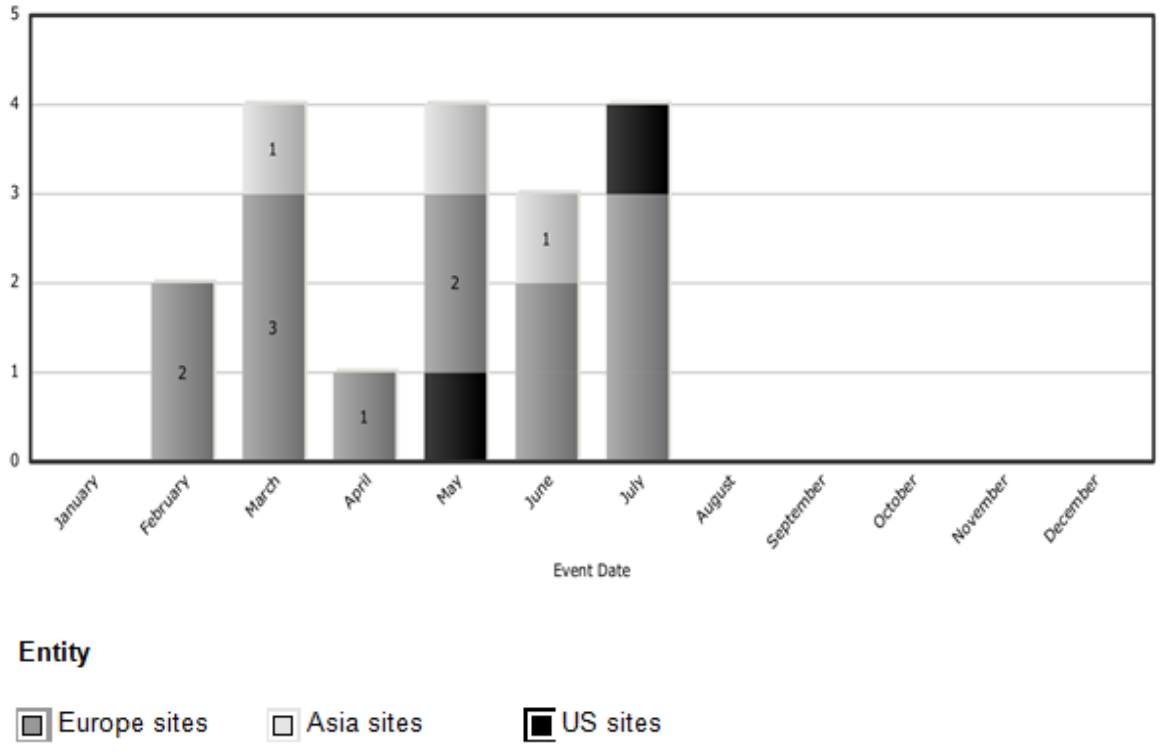

Figure 1: WPSI Relevant Impacts WACKER Group 2015

Another example

Due to the careful collection and monitoring of standardized data, it became evident that the ratio of accidents caused by chemical impact seemed to be increasing despite an overall decreasing amount of injuries.
That caused Wacker Chemie AG to start a program in 2015 to increase awareness to these in many cases avoidable incidents. Different measures and actions were initiated top down to improve the situation. SPIRIT helps with easy access to the data pool and the possibility to create customized reports to carefully track the trend.

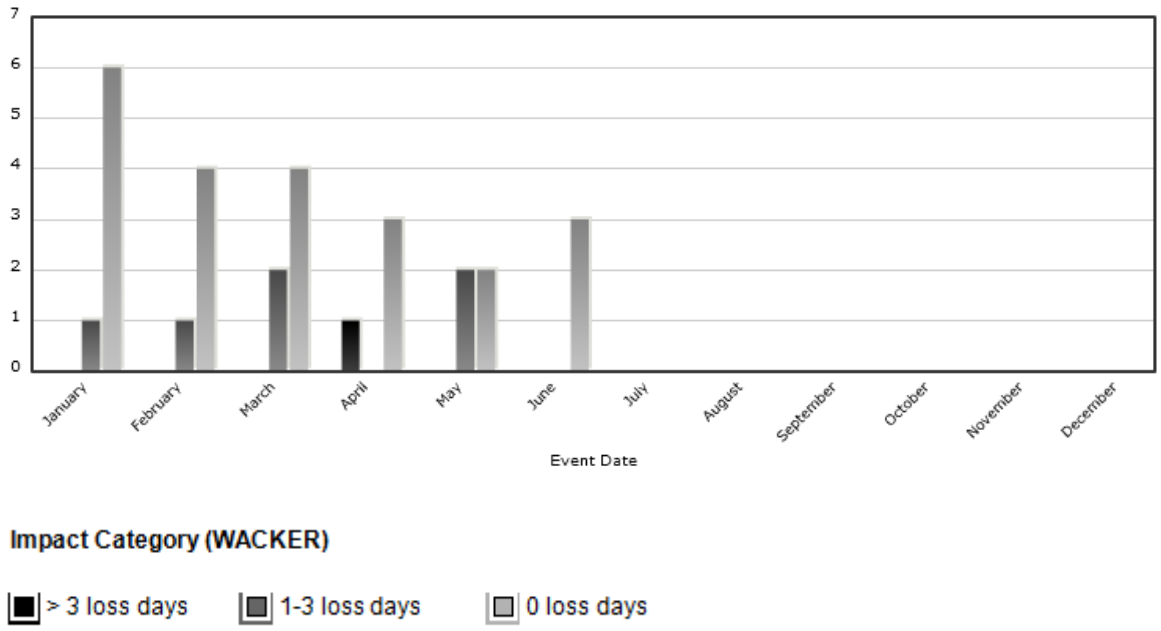

Figure 2: Accidents with chemical exposure WACKER Group 2015

6. Additional properties of the sustainability platform SPIRIT (Sustainability Portal for Integrated Reported Information Tool)

As part of the project "Global EHS&PS Excellence" a need for a global and integrated database solution for global, regional or divisional reporting in the fields of EHSS and IMS was defined.

The sustainability platform SPIRIT covers currently the following applications:
Audit
Incident
EHS-Metrics

All tools connect to the same action item database. That creates the benefit of having only one action list to track from several different sources. Reminder e-mails ensure that they do not get lost or forgotten when reaching the due date.
Just recently, also the legally required job risk assessments can be implemented into SPIRIT. Necessary action items are added to the same mutual tracking tool.

7. Conclusion

The implementation of a global incident database is a huge effort that can be compared to teaching a new language to thousands of people. The system alone may not prevent incidents from happening. But systematically providing necessary data in one place to a defined group of people helps bringing these incidents to a broader awareness and transparency. That way, it helps to look for trends, provides a quicker

and better access to information on global accidents and incidents and supports the evaluation of performance indicators for management.
Although it may take some time to bring all sites to correctly use such global systems, the benefits for a company and especially for corporate functions exceed the efforts necessary.

Reference

Enablon, EHS Management Solution (Version 6; Applications: Audit, Incident, Metrics, Actions)