Accepted Manuscript

Application of Bayesian approach to assessment of mine gas explosion

Xing Tong, Weipeng Fang, Shuaiqi Yuan, Jinyu Ma, Yiping Bai

PII: S0950-4230(18)30148-7

DOI: 10.1016/j.jlp.2018.04.003

Reference: JLPP 3682

To appear in: Journal of Loss Prevention in the Process Industries

Received Date: 20 February 2018

Revised Date: 10 March 2018

Accepted Date: 3 April 2018

Please cite this article as: Tong, X., Fang, W., Yuan, S., Ma, J., Bai, Y., Application of Bayesian approach to assessment of mine gas explosion, *Journal of Loss Prevention in the Process Industries* (2018), doi: 10.1016/j.jlp.2018.04.003.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1	Application of Bayesian approach to assessment of mine gas
2	explosion
3	Xing Tong [*] , Weipeng Fang, Shuaiqi Yuan, Jinyu Ma, Yiping Bai

4 School of Resources and Safety Engineering, China University of Mining & Technology,
 5 Beijing 100083, China;

6 **Corresponding author. Email: tongxing163email@163.com; Phone:* +86-10-62339029

Abstract: Frequent mine gas explosion accidents in recent years have caused 7 catastrophic casualties and economic loss in China. In this paper, based on expert 8 knowledge with treatment by Delphi method to determine conditional probabilities, a 9 Bayesian network (BN) has been developed to investigate the factors influencing 10 mine gas explosion accidents. Based on case analysis of typical mine gas explosion 11 accidents and further evaluation by experts, twenty BN nodes are proposed to 12 represent mine gas explosion process from occurrence causes to explosion impacts, 13 and final consequences. The results of case studies and Sensitivity Analysis (SA) with 14 the proposed Bayesian model indicate that the integration of Bayesian network and 15 Delphi method is an effective framework for dynamically assessing mine gas 16 explosion accident, which could provide a more realistic assessment for emergency 17 decision-making on mine gas explosion disaster response and loss prevention. 18

Keywords: Mine gas explosion, Dynamic assessment, Emergency response, Bayesian
network, Delphi method

21 **1. Introduction**

With the increase of mining depth in coal mining activity, gas explosionaccidents have remained one of the most disastrous and pervasive hazard in China

Download English Version:

https://daneshyari.com/en/article/6972884

Download Persian Version:

https://daneshyari.com/article/6972884

Daneshyari.com