Wanhua Chemical Group Co., Ltd.

Announcement on Investigation Results of Security Accident on Sept 20, 2016

The Board of Directors and all the directors of the Company undertake that the information in this announcement contains no false records, misleading statements or material omissions, and they are jointly and severally liable for the veracity, accuracy, and integrity of the content hereof.

Recently, Yantai Municipal People's Government has approved the Investigation Report on "9.20" Major Explosion Accident in Yantai Industrial Park of Wanhua Chemical Group Co., Ltd., on which the company hereby makes the following announcements:

I. Overview


After the accident, Yantai Municipal People's Government established an investigation group for "9.20" major accident in Yantai Industrial Park of Wanhua Chemical Group Co., Ltd., which was composed of municipal Administration of Work Safety, Supervision Bureau, Public Security Bureau, Federation of Trade Unions, Quality Supervision Bureau, Management Committee of the Development Zone, and other related departments. In addition, officers from the Municipal Procuratorate and expert group of 6 provincial and municipal chemical industry experts were invited to join in the accident investigation.

II. Reasons and nature of the accident

(I) Direct reasons

The broken retainer of the manual feeder ball valve of DAM pipelines caused incomplete closure of the valve, and the instrument operation staff failed to follow the procedures to close the remote switch valve of the DAM pipeline. As a result, DAM entered into the reaction system by accident and reacted with crude M, generating
polyurea and biuret. The polyurea and biuret entered into the crude M buffer tank and, under the high temperature of 200°C, catalyzed the self-polymerization of crude M, a process in which CDI and CO2 were generated. The high-viscosity polymer and ureas generated in the self-polymerization of crude M blocked the outlet, inlet, and two pressure equalizing pipes of the buffer tank. As the self-polymerization continued, the CO2 in the buffer tank accumulated and finally led to explosion due to overpressure.

(II) Indirect reasons

1. Insufficient process management According to the operation procedure, the remote stop valve shall be closed during shutdown period. However, in the actual operation, the remote stop valve was used as the emergency stop valve, and only the flow control valve and the on-site manual stop valve were closed during shutdown period; the shift director, process director, process engineer, equipment manager and other management staff at all levels failed to correct the instrument operator when he did not close the remote stop valve according to the procedure.

2. Improper treatment of production abnormalities The operator and production managers failed to detect timely the abnormalities of temperature, liquid level and flow parameters; in the treatment of abnormal situations of the buffer tank, the on-site staff recognized the difference of this abnormal situation from previous ones, but did not realize the potential risks behind, and thus did not report it to related departments in time, stop operation, or evacuate the staff.

3. Lack of understanding about catalytic mechanism of ureas for MDI self-polymerization. No study had been conducted on the catalytic mechanism of ureas for MDI self-polymerization before the accident, resulting in insufficient understanding about the serious consequences of MDI self-polymerization caused by intrusive DAM.

(III) Nature of the accident

The investigation holds that: the "9.20" explosion accident of Wanhua Chemical Group Co., Ltd. is a major production security accident.

III. Casualties, economic loss, and impact on surrounding areas.

(I) Casualties and direct economic loss

The accident caused four deaths, four injured and direct economic loss of 5.7362 million yuan.

(II) Damage to surrounding areas

According to the on-site observation, there was no leakage of hazard chemical
liquid and gas, and no fire. In addition, no contaminant was detected during the environment monitoring on surrounding areas conducted by the enterprise environmental monitoring team and the environmental protection departments at both municipal and district levels. The accident did not cause any secondary disaster.

IV. Responsibilities and treatment

According to the Investigation Report on "9.20" Major Explosion Accident in Yantai Industrial Park of Wanhua Chemical Group Co., Ltd. approved by Yantai Municipal People's Government, the company has punished the 9 related employees responsible for the accident with measures including cancellation of labor contract, dismissal, observation for employment or dismissal, demotion, demerit recording, and warning, etc.; Yantai Administration of Work Safety imposed a fine of 40% of their annual incomes on those accountable, and 800,000 yuan on Wanhua Chemical Group Co., Ltd.

V. Correction measures

Conduct strict process management, confirmation of major and high-risk operations, enhance discipline inspection, and find out and punish actions against procedures in a timely and strict manner; strengthen management of abnormal situations and startup/shutdown operations, further amend emergency handling procedures of production abnormalities to take effective measures when any abnormality occurs to the equipment and facilities, report problems to management staff in a timely manner, and coordinate related posts to deal with the problems; strengthen full-process management of valves and other safety components, establish and practice a confirmation system on opening and closure of key valves to ensure standard operation; further study the reaction mechanism involved in MDI production with the research results included into production technical files, further optimize process parameters and operation procedures, and take reliable measures to ensure safe process.

The company will learn from the accident, further enhance security management, and practically raise the safety awareness and sense of responsibility of managers and employees of all levels, so as to ensure safe, continuous, and stable operation.

It is hereby notified the above.

Wanhua Chemical Group Co., Ltd.
July 6, 2017