Fire and Police Commission Village of Hales Corners

Meeting Notice and Agenda

July 21, 2020 (Tuesday) - 6:30 p.m.

Notice is hereby given that the Police and Fire Commission of the Village of Hales Corners will meet at the above date and time, at the Village Hall (Board Room), 5635 S New Berlin Road, Hales Corners.

[Notice is given that a majority of the Village Board of Trustees may attend this meeting to gather information about an agenda item over which they may have decision making responsibility. This meeting may constitute a meeting of the Village Board per State ex rel. Badke v. Greendale Village Board, even though the Village Board will not take formal action at this meeting.]

1.0 Call to Order and Roll Call
2.0 Approval of Minutes- June 16, 2020
3.0 Public Comment
4.0 General Business
   4.1 Chief Reports
      4.1.1 Police Chief Report for June – Chief Eric Cera
      4.1.2 Fire Chief Report for June - Chief Pete Jaskulski
   4.2 Action Items
      4.2.1 Retroactive approval of new hire part-time fire personnel: J. Kurpiel
   4.3 COVID-19 Response Review
5.0 Closed Session
The Fire & Police Commission may enter closed session pursuant to Wis. Stat. §19.85(1)(c), for consideration of the employment, promotion, compensation or performance evaluation data of any public employee over which the governmental body has jurisdiction or exercises responsibility, to discuss performance evaluation data for the Police Sergeants positions over which the governmental body has jurisdiction or exercises responsibility, and to re-enter open session at the same place thereafter to act on such matters as discussed therein as it deems appropriate.

6.0 Set date and time of the next meeting – August 18, 2020
7.0 Adjournment

Rachel Pocquette, Deputy Clerk
July 13, 2020

Hearing or speech impaired persons who require special services should notify the Village Clerk's office in advance of the meeting at 414-529-6161.
FIRE & POLICE COMMISSION MEETING – Minutes
June 16, 2020
Village of Hales Corners, WI
5635 S. New Berlin Road

Pres. I. Thomson called the meeting to order at 6:30 p.m.


2.0 APPROVAL OF MINUTES – May 19, 2020 – Motion (Smyczek, Dzick) to approve as presented; unanimously approved.

3.0 PUBLIC COMMENT – None.

4.0 GENERAL BUSINESS

4.1 Chief Reports

4.1.1 Police Chief Report for April – Chief Cera referred commission members to reports in the packet. No questions from the commission.

4.1.2 Fire Chief Report for April – Chief Jaskulski states we had a recent jump in calls for service. This jump has us back to the normal amount of calls for this time of year. The department is also in the process of testing two candidates for hiring. No questions from the commission.

4.2 Action Items

4.2.1 Approval of new General Order for a voluntary physical fitness improvement and testing program – The commission discussed and reviewed documents provided by Chief Cera. Motion (Smyczek, Leonard) to approve the general order for a voluntary physical fitness improvement and testing program; unanimously approved.

4.2.2 Authorization to begin an active recruitment process for the position of Police Officer – Chief Cera states he would like to begin recruitment for the one open position of Police Officer. We do not have any current candidates from past recruitments or promotion. The commission discussed possible recruitment options such as referrals, candidates from out of state, or using the online platform the fire department uses to find candidates. Chief Jaskulski indicated the online program he uses is currently only for fire departments. Discussion took place on ways to attract candidates with experience such as a higher start pay dependent on years of service and additional insurance benefits. The commission asked when Chief Cera would like to start a new officer and if he foresees anyone leaving before that time. Chief Cera states he would like to have someone hired by January 1st, 2021. He is aware of the possibility one officer may be leaving between now and the start of next year. Motion (Sannes, Leonard) to approve the Police Department beginning active recruitment for the position of Police Officer with a January 1st, 2021 start date.

4.2.3 Discussion and recommendation regarding ambulance replacement program – Chief Jaskulski states the condition of one of our two ambulances is deteriorating quickly. Ambulance 72 is continuously in need of repairs and, in turn, out of service. In an eight day time frame our fire department was unable to respond to eleven calls for service due to the ambulance being out of service for repair. This leads to slower response times because we have to call for mutual aid from another neighboring department, loss of revenue for ambulance transports, and creates a rapid increase of hours of use and mileage on the other ambulance. Chief Jaskulski states it will cost approximately $195,000 for a new ambulance and $22,500 for the cot. The funds were not budgeted for; Chief Jaskulski has been working with Administrator Kulik to explore financial options. Once
approved for purchase, Chief Jaskulski estimates it will take approximately six to nine months before the ambulance is in service. Motion (Smyczek, Dzick) to forward to the Village Board for investigating financial options to replace Ambulance 72.

5.0 PRESIDENTS REPORT

5.1 COVID-19 Response Review – I. Thomson inquired if there are any updates from our Police and Fire Departments. Both departments foresee a second COVID-19 wave in the fall and are focused on prevention and preparation measures for when that time comes.

5.2 Civil Unrest Response Review – Chief Cera provided documents to the commission in regards to training and standards of officers. He states Wisconsin has good standards in place that not all other states have. A lot of the training and policy recommendations coming out from Washington D.C. are things we are already doing in Wisconsin. He stressed the importance of getting the word out to the public that these standards are in place here. The commission further discussed standards for extensive background checks on new hires and databases Wisconsin has to view the circumstances around why an officer left another department. I. Thomson asks if we provided any crowd control to other municipalities in the last few weeks. Chief Cera indicates yes a couple officers did respond to assist in other cities and responded to one SMART call. M. Dzick asks if moral has been affected by the recent events. Chief Cera indicates it has had no effect on the moral of our police department.

6.0 SET DATE OF THE NEXT MEETING – Date set for July 21, 2020 at 6:30 p.m. in the Village Hall Board Room.

7.0 Adjournment – Motion (Dzick, Smyczek) to adjourn at 7:28 p.m., unanimously approved.

Prepared by: Rachel Pocquette, Deputy Clerk
OPERATIONS

1. Calls for Service - Year to date total is 4023 total CAD calls. The three year average is 4406.
2. Enforcement Activity - Year to date totals are: 713 traffic citations, 1252 traffic warnings, 79 municipal citations, and 36 parking citations.
3. Major Incident Summary – Please see attached report. [Attachments]
4. OWI Task Force – No OWI deployments were conducted in June.
5. Speed Task Force – On June 12th Officers Joshua Jewell, Laura Brustmann, Vincent Piacentine and Jordan Cooper conducted a total of 5.5 hours of directed enforcement netting eight speeding violations.
6. Seatbelt Mobilization – The Department mobilized for Click It Or Ticket from June 22nd to July 5th to encourage seatbelt use. In total; 143 vehicle contacts resulted in the issuance of 120 warnings and 46 citations but none were for a Seatbelt Violation. That’s a good sign the public information effort was effective.

ADMINISTRATIVE

1. Staffing – Police Aide/Code Enforcement Specialist Jazmine Luther accepted an Administrative Support Specialist position in the Clerk-Treasurer’s Office effective August 3rd.
2. Labor Negotiations – The officers’ bargaining unit is negotiating with the Village to determine a successor agreement to the 2018-2020 contract.
3. Budget – Chief has begun collaboration with Administrator Kulik on the 2021 budget.
4. Recruitment – Lieutenant Brent Kroll is modifying the department’s recruitment materials to attract experienced police officers as applicants.
5. Training – Police Officer Jordan Cooper continues Field Training.
6. Training – The Training and Standards fiscal year ended and all officers finished all required training; however, eight officers fell short of the required minimum hours of general elective training. This is a common issue state wide due to courses cancelled by COVID-19 restrictions. The DOJ has confirmed that the officers’ certification will not be jeopardized.
8. Grant – Holz Family Foundation Grant, no update.

ACKNOWLEDGEMENTS

1. Correspondence – The Department has received a tremendous amount of support from residents expressing confidence in the Department’s mission. It is greatly appreciated!
2. Probation – Sergeant Nicholas Zellmer satisfactorily completed his one year of probation.
3. Thank You – Officer Joe Becker, Officer Laura Brustmann and Officer Joshua Jewell all received a Thank You from citizens they assisted. [Attachments]
4. Commendation – Officer Vincent Piacentine received a Lifesaving Commendation for his rapid assessment and treatment of an overdose victim. [Attachments]
5. Commendation – Officer William Kunkel and Officer Vincent Piacentine received an Official Commendation for their de-escalation of a subject in crisis. [Attachments]
Date: July 6, 2020
From: Police Chief
To: Fire and Police Commission
Subject: Major Incident Summary – June 2020

20-3254 Crisis Intervention – On June 1st at 5:48/AM, Officers Kunkel, Piacentine and Chief Cera responded to a report of subject breaking into vehicles at the Plum Tree apartment complex. Officers made contact with the subject who was frenetic due to a medical issue. They were able to successfully deescalate the situation and direct the subject to proper care.

20-3334 Aggravated Assault – On June 4th around 4:26/PM, Officer Boneck, Detective Heckman, and Sergeants Zellmer and Jacobi responded to a residence for a report of a strong-arm robbery. Investigation revealed that the victim was tackled, strangled, and injured by her boyfriend after failing to give him money. The victim was successful in fighting off the suspect and fled the residence. The suspect was arrested; however, the District Attorney’s Office declined to issue charges.

20-3786 Dog Bite - On the 21st at approximately 6:21/AM, Officers Chucka and Kunkel responded to a report of a child bit by a dog at a residence. Officers discovered a 1 year old with an arterial bleed. They applied a tourniquet to control the bleeding prior to the arrival of additional assistance. Investigation determined that there were no child abuse or neglect issues. The child is expected to make a full recovery.

20-3605 and 3854 Armed Subjects – On June 14th Officer Jewell and Sergeant Jacobi took a report from a victim who was threatened by two juveniles with a handgun while jogging in the area of Edgerton and Allenwood. Officers were not able to locate the suspects at that time. Then on the 23rd Officer Boneck and Sergeant Zellmer responded to a report of two juveniles threatening other juveniles and brandishing a handgun near the same location. Upon their arrival the subjects fled. Numerous additional Hales Corners and Greenfield officers responded, ultimately locating and arresting the two suspects. After an extensive search and investigation two loaded handguns belonging to the suspects were recovered. The 15 and 16 year old suspects were referred to the Juvenile Court for charges.

20-3945 Overdose – On the 28th at about 4:14/AM, Officers Piacentine and Chucka responded to assist the Fire Department with a pulseless non-breathing patient at a residence. Officers were able to begin revival efforts through the administration of an opioid antagonist. Care was turned over to emergency medical personnel and the victim is expected to recover. In this instance it appears that the subject was unintentionally exposed to a high concentration of THC and an unknown amphetamine through the use of a non-regulated vape cartridge.
From: Andrew  
Sent: Monday, June 8, 2020 4:31 PM  
To: ecera@hcpd.net  
Subject: Officer Becker and Officer Brustman

Chief Cera, I just want to take a minute of your time to say thank you to Officer Becker and Officer Brustman who went above and beyond for me today. I have Kidney disease and on one of the hottest days of the year I locked my keys in the trunk and triggered the security system shutting off all power to the car. They were able to get the door open by the handle and I was able to reset the security and be on my way. Thanks again its much appreciated.

Sincerely;
Andrew
To: The Police Officer

Who helped me on Thursday, June 2, to give me a ride home from Forest Ridge, when I was exhausted after my walk today. I need to apologize because I don’t know your name. It was around 3pm at 50 10th and across from Culver’s. Thank you, again.

Sincerely,
Rita Reynolds

Stay safe, and I will pray for your sister.
July 1, 2020

Sergeant Nicholas Zellmer
Hales Corners Police Department
5635 South New Berlin Road
Hales Corners, WI 53130

Dear Nick,

Congratulations!

This letter confirms that as of June 29th, 2020 you have completed your probationary period for the rank of Sergeant.

You may now enjoy all the rights and responsibilities of the position.

Please keep up the good work.

Sincerely,

Eric R. Cera
Chief of Police
July 1, 2020

FORMAL LETTER OF COMMENDATION
POLICE OFFICER VINCENT PIACENTINE

On Monday, June 28th, 2020 at 4:14 AM, Police Officer Vincent Piacentine and Police Officer Kyle Chucka responded to 10650 West Parnell Avenue for a report of pulseless non-breathing person. Upon arrival Officer Piacentine conducted a patient assessment and determined the subject was unresponsive and insufficiently breathing. Officer Chucka located vaping products in the vicinity of the victim.

Based upon the circumstances Officer Piacentine presumed the likelihood of a drug overdose then administered Narcan to the unresponsive victim, continued chest rubs and patient monitoring. After the arrival and upon evaluation by Emergency Medical Personnel Officer Piacentine was directed to administer a second dose of NARCAN and continue his efforts. This restored the victim’s breathing and consciousness.

The preservation of life is the most desired and fundamental function of law enforcement. Police Officer Vincent Piacentine’s accurate evaluation of the scene, timely administration of an opioid antagonist, and cooperative working with other officers and medical personnel were critical elements in saving the victim’s life. Vince’s actions are exemplary, and reflect great credit not only on himself, but the Hales Corners Police Department, and the law enforcement community.

It is with great honor that I bestow upon Police Officer Vincent Piacentine this formal Letter Of Commendation acknowledging his Lifesaving effort and thank him for his dedicated service.

Respectfully,

Eric R. Cera
Chief of Police
June 29, 2020

FORMAL LETTER OF COMMENDATION
POLICE OFFICER WILLIAM KUNKEL

On Monday, June 1st, 2020 at 5:48/AM, Police Officer William Kunkel and Police Officer Vincent Piacentine responded to 10355 West Plum Tree Circle for a report of a subject breaking into vehicles. Upon arrival Officer Kunkel located a frenetic juvenile female inside of a vehicle in a compromised position. Officer Kunkel radioed for assistance and began to assist the female in exiting the vehicle. Officer Piacentine arrived at that time.

Upon successfully clearing the vehicle the subject yelled suicidal statements and attempted to disarm Officer Kunkel. Officer Kunkel maintained control of his sidearm and was kicked in the face but with the assistance of Officer Piacentine established control of the subject. The officers recognized that the subject was in crisis and relayed that information to dispatch so that Emergency Medical Services could respond appropriately. The officers continued to maintain control of the subject and attempted to calm her.

Upon the arrival of Emergency Medical Personnel the officers assisted in quickly and safely securing the patient who was now in shock. Further investigation by both officers located a family member of the patient who provided critical information needed by medical personnel for the providence of care.

Police Officer William Kunkel’s abilities to; remain composed when endangered, to use the appropriate level of force, apply deductive reasoning, and communicate clearly with other officers and medical personnel were critical elements in deescalating a life threatening situation. Billy’s actions are exemplary, and reflect great credit not only on himself, but the Hales Corners Police Department, and the entire law enforcement community.

It is with great honor that I bestow upon Police Officer William Kunkel this formal Letter Of Commendation and thank him for his outstanding service.

Respectfully,

[Signature]

Eric R. Cera
Village of Hales Corners
POLICE DEPARTMENT
5635 South New Berlin Road, Hales Corners, WI 53130

June 29, 2020

FORMAL LETTER OF COMMENDATION
POLICE OFFICER VINCENT PIACENTINE

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Upon the arrival of Emergency Medical Personnel the officers assisted in quickly and safely securing the patient who was now in shock. Further investigation by both officers located a family member of the patient who provided critical information needed by medical personnel for the providence of care.

Police Officer Vincent Piacentine’s abilities to remain calm in the face of danger, to utilize the appropriate level of force, apply deductive reasoning, and work cooperatively with other officers and medical personnel were critical elements in deescalating a life threatening situation. Vince’s actions are exemplary, and reflect great credit not only on himself, but the Hales Corners Police Department, and the entire law enforcement community.

It is with great honor that I bestow upon Police Officer Vincent Piacentine this formal Letter Of Commendation and thank him for his outstanding service.

Respectfully,

Eric R. Cera
Hales Corners Fire Department
Hales Corners, WI
This report was generated on 7/13/2020 2:10:22 PM

Average Response Time per Response Mode for Station for Date Range
Station: All Stations | Start Date: 06/01/2020 | End Date: 06/30/2020

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<th>NUMBER of APPARATUS</th>
<th>AVERAGE RESPONSE TIME in MM:SS</th>
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<td>3:51</td>
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<tr>
<td>Lights and Sirens</td>
<td>92</td>
<td>4:42</td>
</tr>
<tr>
<td>No Lights or Sirens</td>
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<td>4:01</td>
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Only REVIEWED incidents included
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<thead>
<tr>
<th>INCIDENT TYPE</th>
<th># INCIDENTS</th>
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<tbody>
<tr>
<td>111 - Building fire</td>
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<tr>
<td>118 - Trash or rubbish fire, contained</td>
<td>1</td>
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<tr>
<td>221 - Overpressure rupture of air or gas pipe/pipeline</td>
<td>1</td>
</tr>
<tr>
<td>311 - Medical assist, assist EMS crew</td>
<td>1</td>
</tr>
<tr>
<td>320 - Emergency medical service, other</td>
<td>8</td>
</tr>
<tr>
<td>321 - EMS call, excluding vehicle accident with injury</td>
<td>72</td>
</tr>
<tr>
<td>322 - Motor vehicle accident with injuries</td>
<td>2</td>
</tr>
<tr>
<td>324 - Motor vehicle accident with no injuries</td>
<td>1</td>
</tr>
<tr>
<td>371 - Electrocution or potential electrocution</td>
<td>1</td>
</tr>
<tr>
<td>412 - Gas leak (natural gas or LPG)</td>
<td>1</td>
</tr>
<tr>
<td>440 - Electrical wiring/equipment problem, other</td>
<td>1</td>
</tr>
<tr>
<td>444 - Power line down</td>
<td>4</td>
</tr>
<tr>
<td>445 - Arcing, shorted electrical equipment</td>
<td>1</td>
</tr>
<tr>
<td>511 - Lock-out</td>
<td>1</td>
</tr>
<tr>
<td>611 - Dispatched &amp; cancelled en route</td>
<td>5</td>
</tr>
<tr>
<td>651 - Smoke scare, odor of smoke</td>
<td>1</td>
</tr>
<tr>
<td>700 - False alarm or false call, other</td>
<td>2</td>
</tr>
<tr>
<td>715 - Local alarm system, malicious false alarm</td>
<td>1</td>
</tr>
<tr>
<td>735 - Alarm system sounded due to malfunction</td>
<td>1</td>
</tr>
<tr>
<td>743 - Smoke detector activation, no fire - unintentional</td>
<td>1</td>
</tr>
<tr>
<td>744 - Detector activation, no fire - unintentional</td>
<td>1</td>
</tr>
<tr>
<td>745 - Alarm system activation, no fire - unintentional</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Reviewed Incidents for ST1 - Hales Corners Fire Department:** 109
July 16, 2020

**Total Calls**

Fire = 17  
EMS = 88  
Total = 105 (4 Dispatch errors/tests already subtracted)

Total calls for the year 2020 = 534  
Total calls for the year 2019 = 620  
Total calls for the year 2018 = 695

**ALS Responses**

Franklin – 17  
Greendale - 1

**Mutual Given/Received for April**

Given = 24  
Received = 4 (This number doesn’t include ALS response into the village)

**Staffing as of June 10, 2020**

- total part time active is 26  
- Other Leave = 4  
- Fulltime positions- 1 Chief, 3 Captains, 1 Driver Operator  
- Driver Operators (active)- 12  
- EMT-P- 7  
- AEMT- 9  
- EMT Basic - 13

**COVID 19**

There are no outstanding issues related to the COVID-19 pandemic. Social distancing directives are still in place within the station.

The HCFD has been awarded a piece of decontamination equipment for no cost. This equipment is new biotechnology recently released by the military. The company is EASYDECON. They held a contest to give equipment to fire departments, hazmat teams, schools and hospitals for the purpose of decontaminating for the COVID-19 virus. They were spending $75,000 in this contest. We were awarded a back-pack MACAW unit valued at nearly $7,000. This report included several attachments with EASY DECON information. We vetted this product through the Milwaukee Fire Department Hazmat. They utilize this equipment and told us it is “the real deal”.
Recruitment

Join the Fire Service produced a media blitz for us in the social media arena. There have been nearly 50 inquiries into our internship program as well as employment as a Firefighter/EMT. We have interviewed approximately 12 people in the past two weeks.

We anticipate bringing on 10-11 interns by the second week of August.

We are also in the process of testing 3 individuals with the hope of employing them as paid-on premise Firefighters/EMT’s in August.

Training

We have lifted our COVID-19 training restrictions and have gone back to our bi-weekly department training sessions.

The fulltime staff completed approximately 24 hours of online training and 24 hours of classroom practical in tactical fire response. This course was paid for through a grant made available to Milwaukee County fire departments.

Fire Response

The HCFD responded to a mutual aid request from Tess Corners for a house fire. This occurred on June 16\textsuperscript{th} at 1:30pm. Chief 7 and Engine 71 responded for a fully involved fire.

Apparatus

The approval for funding the purchase of a new ambulance was approved by the Village Board. The specifications have been finalized with a quote of $189,551.00. We are waiting on an approximate delivery date.

Peter R Jaskulski
Fire Chief
pjaskulski@halescornersfire.org
WHITE PAPER: EFFICACY OF EASYDECON® ON SARS-CORONAVIRUS

Robert H. Comstock

EXECUTIVE SUMMARY

- DF200, a product originally invented by Sandia National Laboratories under grant by the US Department of Energy, has been tested extensively in laboratory and field settings and shown to achieve a 3-4 log inactivation of bacteriophage virus (SARS, Corona Virus) in 30-60 seconds. It kills by a chemical oxidation/reduction reaction, and the pathogens cannot grow immune.
- DF-200 is now marketed by Integrad under the trade name EasyDECON®.
- EasyDECON® is inherently biodegradable and thus simplifies both application and clean-up.
- EasyDECON® is only mildly corrosive.
- EasyDECON® can be applied using various methods, such as applied as a liquid, as a foam, and/or as a fog, depending on the circumstances of the area being decontaminated.

INTRODUCTION

The first major epidemic fueled by the Corona Virus (CoV) occurred in China in 2019. Some studies by a lab in India[1] found a number of portions of the virus chain which were duplicates of similar portions found on the SARS virus and the HIV virus. The areas discovered on the CoV were falsely attributed to human intervention, but this unreviewed report was discredited, and the accusations of purposeful insertions were removed.

Coronaviruses were first identified nearly 60 years ago, but they received notoriety in 2003 when one of their members was identified as the etiological agent of the Severe Acute Respiratory Syndrome (SARS-CoV). Studies on the SARS virus in 2004 led to a patent titled "Corona Virus Isolated from Humans" (2) and stated that the SARS-CoV, the newly isolated corona virus was the causative agent of SARS, and was termed SARS-CoV. Coronaviruses are positive strand RNA viruses that cause disease in humans, and domestic and companion animals. It is interesting that the CoV contains protein chains which are exactly the same chains as found in the SARS virus and the HIV virus. The Corona Viruses are similar to all viruses. See Figure 1 below:
Figure 1: Structure of Corona Virus: From Corona-Live-Dashboard-Tracker, February 26, 2020

Lab studies done at that time by Sandia National Laboratories demonstrated the high effectiveness of EasyDECON® against the SARS-CoV virus(3).

We are currently experiencing another outbreak of the CoV. The epidemic is spreading rapidly, despite efforts to contain it. It has been detected on Cruise ships, Airplanes, and hotels, as well as other common places such as offices. See Figure 2 for a map of cases provided by John Hopkins CSSE on February 26, 2020:

Figure 2: Growth and Spread of the Corona Virus Infections. Map shows Far Eastern areas, while numbers show total Global data.
Further, on February 26, 2020, the CDC issued a warning that it expects the Corona Virus to spread to the US and they are preparing for a potential pandemic.

**DISCUSSION**

**Formula Development**

DF-100 (Decon Formula 100) which evolved into the improved DF-200 was created by Sandia National Laboratories (Sandia) in the late 1990's. After demonstrating efficacy in numerous lab tests, it was licensed to Envirofoam Technologies, Inc. (EFT) in early 2000 and it became EasyDECON® (4).

The author of this paper, Mr. Robert H. Comstock, Chemical Engineer, was Director of Operations for EFT at that time and led the commercialization of DF200. This product, EasyDECON®, was subsequently deployed by the military for Desert Storm, where it provided protection for the troops and equipment during that campaign.

My Comstock continued to work with Sandia on a product enhancement, a concentrated version, the success of which led to issuance of a new patent (5) with Mr. Comstock listed as co-inventor.

**Efficacy**

1. **Kill of Biological Agents**

Some consider the Biological Weapon threat to be more serious than the Chemical Weapon threat. This is in part because of the high toxicity of BW agents, their ease of acquisition and production, and difficulty in detection. There are hundreds of biological warfare agents available for use by terrorists. They may be grouped into the categories of spore forming bacterium (e.g., anthrax), vegetative bacterium (e.g., plague, cholera), virus (e.g., smallpox, yellow fever), and bacterial toxins (e.g., botulism, ricin). The focus of this white paper is on the decontamination of spores as they are recognized to be the most difficult microorganism to kill.

Bacterial spores are highly resistant structures formed by certain gram-positive bacteria usually in response to stresses in their environment. The most important spore-formers are members of the genera, *Bacillus* and *Clostridium*. Spores are considerably more complex than vegetative cells. The outer surface of a spore consists of the spore coat that is typically made up of a dense layer of insoluble proteins usually containing a large number of disulfide bonds. The cortex consists of peptidoglycan, a polymer primarily made up of highly cross-
linked N-acetylglicosamine and N-acetylmuramic acid. The spore core contains normal (vegetative) cell structures such as ribosomes and a nucleoid.

Since their discovery, considerable research has been carried out to investigate methods to kill bacterial spores. Although spores are highly resistant to many common physical and chemical agents, a few antibacterial agents are also sporidical. Many powerful bactericides, however, may only be inhibitory to spore germination or outgrowth (i.e., sporistic) rather than sporidical. Examples of sporidical reagents, using relatively high concentrations, are glutaraldehyde, formaldehyde, iodine and chlorine oxyacid compounds, peroxy acids, and ethylene oxide. In general, all of these compounds are considered to be toxic.

There are several mechanisms generally recognized for spore kill. These mechanisms, which may operate singularly or simultaneously, are described below:

The dissolution or chemical disruption of the outer spore coat may allow penetration of oxidants into the interior of the spore. Several studies (King and Gould, 1969; Gould et al., 1970) suggest that the S-S (Disulfide) rich spore coat protein forms a structure which successfully masks oxidant-reactive sites. Reagents that disrupt hydrogen and S-S bonds increase the sensitivity of spores to oxidants. A typical protein with disulfide linkage is shown in Figure 3 below.

\[
\text{H}_2\text{N-CH-COOH} \\
\text{CH}_2 \\
\text{S} \\
\text{S} \\
\text{CH}_2 \\
\text{H}_2\text{N-CH-COOH}
\]

**FIGURE 3:** Protein with cysteine linkage.
### Table 1: Kill of Spore Forming Bacteria

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<th>Agent/Simulant</th>
<th>Time</th>
<th>pH 7.0</th>
<th>pH 8.0</th>
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<tbody>
<tr>
<td>Anthrax Spores</td>
<td>30 min.</td>
<td>99.99</td>
<td>99.99</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>99.9999</td>
<td>99.9999</td>
</tr>
<tr>
<td>Anthrax simulant (B. Globigii spores)</td>
<td>30 min.</td>
<td>99.99</td>
<td>99.99</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>99.9999</td>
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### Table 2: Biological Agents Tested and Killed

**EasyDECON® IS PROVEN TO NEUTRALIZE/KILL BIOLOGICAL AGENTS**

<table>
<thead>
<tr>
<th>Agent/Simulant</th>
<th>Foot &amp; Mouth (FMD)</th>
<th>Cholera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspergillus Niger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erwinia herbicola</td>
<td>Pseudomonas P.</td>
<td>Influenza A</td>
</tr>
<tr>
<td>Plague -Y. Pestis</td>
<td>Bacillus subtilis</td>
<td>Salmonella choleraesuis</td>
</tr>
<tr>
<td>Avian Flu H5N8</td>
<td>Hemorrhagic Fever (VHF)</td>
<td>Citrus Canker</td>
</tr>
<tr>
<td>Escherichia Coli</td>
<td>Rhinovirus–Mult. Strains</td>
<td>Listeria monocytogenes</td>
</tr>
<tr>
<td>Pseudomonas A.</td>
<td>Bovine coronavirus</td>
<td>SEB (Staph Toxin)</td>
</tr>
<tr>
<td>Avian Flu H5N1</td>
<td>Hepatitis A (HAV)</td>
<td>Clostridium botulinum</td>
</tr>
<tr>
<td>Feline Calicivirus</td>
<td>Ricintoxin</td>
<td>Mycobacterium bovis</td>
</tr>
<tr>
<td>Pseudomonas F.</td>
<td>Candidabombicola</td>
<td>Staph A (MRSA)</td>
</tr>
<tr>
<td>Bacillus anthracis</td>
<td>HIV Type 1</td>
<td>Clostridium sporogenes</td>
</tr>
<tr>
<td>Smallpox</td>
<td>Salmonella enterica</td>
<td>Norovirus</td>
</tr>
<tr>
<td>Tularmia</td>
<td>Penicillium digitatum</td>
<td>Yellow Fever Virus</td>
</tr>
</tbody>
</table>
2. Testing on Bacteria and Molds

<table>
<thead>
<tr>
<th>Lot #</th>
<th>Challenge Species</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>479-110</td>
<td>Staphylococcus Aureus</td>
<td>100% 'Killed'</td>
</tr>
<tr>
<td></td>
<td>Pseudomonas Aeruginosa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salmonella Choraesuis</td>
<td></td>
</tr>
<tr>
<td>479-114</td>
<td>Staphylococcus Aureus</td>
<td>100% 'Killed'</td>
</tr>
<tr>
<td></td>
<td>Pseudomonas Aeruginosa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salmonella Choraesuis</td>
<td></td>
</tr>
<tr>
<td>479-112</td>
<td>Aspergillus Niger</td>
<td>100% 'Killed'</td>
</tr>
<tr>
<td></td>
<td>Pencillium Digitatum</td>
<td></td>
</tr>
<tr>
<td>479-113</td>
<td>Stachybotrus Chartarum</td>
<td>100% 'Killed'</td>
</tr>
</tbody>
</table>

*All tests used inoculated Porcelain Pennycylinders as carriers, per test protocol

3. Testing on SARS-CoV virus

Severe Acute Respiratory Syndrome (SARS) is caused by a coronavirus that remains infectious for extended periods in the environment. Research was done to evaluate the efficacy of Sandia developed decontamination formulations, such as DF-200, at various concentrations against the SARS coronavirus. SARS virus has been recently classified under antigenic group II among the family Coronaviridae. Bovine coronavirus (BCV) was used as safe a surrogate of SARS virus for studying the viral inactivation.

Figure 4: Testing of DF-200 against Corona Virus

Lane 1: DNA ladder, Lane 2: Positive sample of BCV, **Lane 3: Negative sample of BCV**,
Lane 4: BCV + 0.1M PBS (TRT Cont), Lane 5: BCV + 12.5% Sandia DF-200D, Lane 6: BCV + 25% Sandia DF-200D, Lane 7: BCV + 50% Sandia DF-200D
APPLICATION METHODS-INTELAGARD EQUIPMENT

EasyDECON® can be delivered to the toxins in a variety of manners and phases to provide the necessary detoxification. One useful form of delivery is foam. A non-toxic, non-corrosive aqueous foam with enhanced physical stability for the rapid neutralization of toxins, especially BW agents, was the primary focus of the early development work. Sandia used Intelagard’s Macaw® Backpack for foam testing. The foam formulation was based on a surfactant system to solubilize sparingly soluble toxins and to increase rates of reaction with nucleophilic reagents. The formulation also included mild oxidizing agents to neutralize biological toxins along with components to enhance the physical stability of the foam.

This neutralization technology was attractive for civilian and military applications for several reasons including: (1) a single neutralization solution could be used for both chemical and biological toxins, (2) it was rapidly deployable, (3) mitigation of agents was accomplished in bulk, aerosol, and vapor phases; (4) it exhibited minimal health and collateral damage, (5) it required minimal logistics support, (6) it had minimal run-off of fluids and no lasting environmental impact, and (7) it was relatively inexpensive.

Methods such as sprays, mists and fogs can also be utilized with the same basic formulation. The objective of these alternative methods is to minimize the quantity of water that is required to be used in the restoration of controlled environments (such as indoor facilities) and facilitate access of the formulation to the Bio agents.

The alternative deployment methods have various advantages over foam deployment for small or difficult area decon. In one embodiment, the formulation of the original invention was an aqueous-based formulation that was capable of being deployed as a fog (i.e., as an aerosol with particulate sizes ranging from 1-30 microns) for the rapid neutralization of target contaminants. A fog, can be used to achieve effective decon in areas where decontamination by a foam is difficult, if not impossible. One example is the interior of air conditioning ducts. A fog can be generated at registers and other openings in the duct and travel a significant distance inside of the duct to decontaminate hard to reach places. An additional advantage of a fog is that a relatively automated or semi-automated decontamination system can be set-up at the scene of an attack. Remotely activated foggers can be placed inside of a facility and turned on at periodic intervals (from a remote location) to completely decontaminate the facility. This method greatly decreases the potential for decontamination personnel to be exposed to a CBW agent.

The formulation exhibits low-corrosivity and low-toxicity properties and can be deployed through commercially available fog generating devices. Current decontamination formulations utilize toxic and/or corrosive chemical to achieve destruction of CBW agents that can potentially damage sensitive equipment with which it comes into contact.
See the Intelagard web site to review other application equipment available, including large area spraying equipment and fogging equipment, or refer to the Intelagard Introductory Briefing(6)

Intelagard's Macaw Backpack

RESULTS AND DISCUSSION

Exhaustive testing of EasyDECON® has shown it to be highly effective on biological agents and pathogens. It has achieved up to 7 log kill (99.99999%) even on difficult to kill spore forming bacteria. It has demonstrated complete inactivation of the corona virus simulant BCV after 1 minute of exposure with concentrations as low as 12.5% of the recommended concentration and in the presence of contaminating organic material including feces and compost.

EasyDECON® kills pathogens by a chemical oxidation/reduction reaction as opposed to waging a biological attack via antibodies; this means that pathogens cannot develop an immunity to the product.

It can be applied as a foam, liquid or fog which allows the user to select the most appropriate deployment method to be used for the area being treated.
CONCLUSIONS

1. The EasyDECON® decontamination formulation has been proven to kill all biological agents it has been tested against.
2. The EasyDECON® decontamination formulation is deemed to be highly effective at completely inactivating SARS-like coronaviruses as demonstrated by inactivation of the Bovine Corona Virus in lab tests.
3. EasyDECON® can be applied as a foam, liquid, or fog according to the circumstances of the area to be treated.
4. EasyDECON® is only mildly corrosive.
5. EasyDECON® is inherently biodegradable.

This paper was prepared by Robert H. Comstock, Senior Chemical Engineer

[Signature]  
February 27, 2020  
[Date]
REFERENCES

1. Uncanny similarity of unique inserts in the 2019-nCoV spike protein to HIV-1 gp120 and Gag, Kusuma School of biological sciences, Indian institute of technology, New Delhi-110016, India and Acharya Narendra Dev College, University of Delhi, New Delhi-110019, India, Prashant Pradhan$1,2, Ashutosh Kumar Pandey$1, Akhilesh Mishra$1, Parul Gupta1, Praveen Kumar Tripathi1, Manoj Balakrishnan Menon1, James Gomes1, Perumal Vivekanandan1and Bishwajit Kundu*1
Macaw® Backpack

Use the Macaw CAF backpack for rapid fire suppression today, decontaminate an area with it tomorrow, and use it for HAZMAT remediation the next day. Simply rinse out the tank and fill it with the appropriate solution for the situation.

Totally self-contained, the Macaw is widely used by the US Military as well as wildland fire and industry professionals. Ease of operation has been combined with rugged construction to create a portable system that is reliable and ready for instant response in the most demanding situations.

INTELAGARD®
303.309.6309  800.468.6090
www.intelagard.com
Macaw® Backpack

PART NO (Standard Safety Yellow Version):
  w/o cylinder: 46191601-V956
  w/cylinder: 46191601-V968

SPECIFICATIONS
  System Dimensions: 26.5” (67.31 cm) H x 17.3” (43.94 cm) W x 13” (33.02 cm) D
  Operating Pressure: ~100 psi (6.9 BAR)
  Liquid Capacity: 5 gal. (19 L)
  Projection Distance: ~30’ (9.14 m)*
  Foam Expansion: ~35:1*
  System Weight Dry (w/o cylinder): ~17.5 lb (7.9 kg);
    w/empty air cylinder add ~12 lb (5.44 kg)
  System Weight Full (w/5 gal. (19 L) liquid & full air cylinder): ~72 lb (32.66 kg)
  Discharge Hose: 5’ (1.52 m), 1/2” (1.27 cm) diameter
  Standard Nozzle: Intelagard Smooth Bore

FEATURES
  Compatible with a wide range of air cylinders (7” (17.78 cm) diameter or less)
  Complete system; independent of hoses or other umbilical support
  Front view pressure gauge to check cylinder pressure
  Low pressure air connection for alternate power source use
  On-demand foam expansion control
  Accessory gear pouch for convenient carrying option
  Handset with pistol grip trigger with lockable action handset for point and shoot activation
  Adjustable harness for variable fit and load distribution with comfortable, ergonomic fit
  66 cu. ft. cylinder empties 5 gal. (19 L) tank up to ~4 times
  Dependable performance, high-quality construction and components

OPTIONS
  Extensive nozzle and foam selections (call for information)
  Choice of colors: Safety Yellow (standard), Desert Tan
  Mountable powder coated steel storage rack
  4500 (310.26 BAR) SCBA, carbon wrapped air cylinder
    (CGA and DIN valves available)
  Air cylinder sleeve

* Depending on foam, hose and nozzle used

INTELAGARD®
303.309.6309 Toll Free 800.468.6090
www.intelagard.com
EasyDECON®: A Better and Safer Solution Than Bleach

EasyDECON® provides a variety of benefits over bleach as a decontaminant and disinfectant in terms of use, efficacy, shelf life and environmental footprint. When people, organizations and businesses use bleach to decontaminate/disinfect a surface, they are assuming that the product they have purchased off the shelf is potent enough to achieve an effective kill of pathogenic organisms. Unfortunately, in a majority of cases, they are gravely mistaken!

Some very important facts about bleach that consumers are frequently unaware of include:
- Regardless of the brand, the hypochlorite content of bleach products decays over time – the effective shelf life of bleach (starting the moment it is created) is around 12 months. Taking into effect the time it takes to reach the commercial shelf, that leaves a maximum shelf life of around 9 months after purchase.
- In order for bleach to retain its effectiveness within its shelf life, it must be stored in an environment that retains a temperature of ~ 70°F (21°C);
- The United States EPA sets the standard of 6% hypochlorite for disinfectants – check the labels, as many bleach products have a much lower content;
- Also, check the bleach label for an EPA registration number. Odds are it won’t have one!

People trusting their well-being to bleach based disinfectants have no way to verify the hypochlorite levels of the bleach product being used. As bleach is very often diluted prior to use, this fact is compounded and can result in a totally ineffective disinfecting process. Instructions for use on bleach containers are often disregarded; ‘wet’ contact time is at least 5 minutes, not the swift pass over with a rag that we see on TV. Even if the bleach product used retains the 6% hypochlorite levels approved by the EPA, misuse very often leads to a ‘disinfected’ surface that remains hazardous and the solution used and its runoff becoming what can be thought of as a ‘toxic soup’.

EasyDECON® (Part 2) does not contain hypochlorite, but instead uses hydrogen peroxide at a level of 7.98% to achieve its decontamination/disinfectant properties. The established and validated shelf life of EasyDECON® Part 2 is up to 5 years when stored at ideal conditions, and date of manufacture is included on all packaging. There are many more advantages to EasyDECON® over bleach. Take a look at the table below for a visual comparison of EasyDECON® and bleach.

<table>
<thead>
<tr>
<th>EasyDECON®</th>
<th>Bleach</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ EPA Registered</td>
<td>✔ Not all bleach products are EPA registered, meaning they likely DO NOT contain the required 6% hypochlorite content required to meet disinfectant criteria</td>
</tr>
<tr>
<td>✔ Effective shelf life of up to 5 years</td>
<td>✔ Effective shelf life of 6 months or less at ~ 70°F</td>
</tr>
<tr>
<td>✔ Effective levels of H₂O₂ easily field testable</td>
<td>✔ No field test to verify bleach meets EPA required 6% hypochlorite content by weight</td>
</tr>
<tr>
<td>✔ Inherently biodegradable</td>
<td>✔ Highly corrosive to metals – causes severe corrosion to equipment</td>
</tr>
<tr>
<td>✔ No HAZMAT considerations for storage or transportation</td>
<td>✔ Effectively deployed as a liquid only</td>
</tr>
<tr>
<td>✔ Destruction of contaminants leaves benign effluents</td>
<td>✔ Destruction of certain materials can leave toxic effluents</td>
</tr>
<tr>
<td>✔ Deploys as a foam, liquid or fog</td>
<td>✔ Bleach is combined with water and sprayed onto a surface – no visual feedback to indicate effective target coverage</td>
</tr>
<tr>
<td>✔ Visual indicators of area coverage – foam blankets the target area</td>
<td>✔ Most testing conducted at 5-10% dilution ratios – field mixing can result in ineffective, low-percentage mixtures. Users must research what concentration of bleach to use to kill/neutralize pathogenic microorganisms</td>
</tr>
<tr>
<td>✔ Foam blanket prevents contamination spread, off gassing</td>
<td>✔ Solution dries quickly which can lead to inadequate contact time to kill/neutralize the pathogen – requires continuous rewetting to ensure contact time/effectiveness</td>
</tr>
<tr>
<td>✔ Foam has much longer ‘dwell’ time, ensuring the requisite contact time</td>
<td>✔ Surfactant carrier solution lowers surface tension allowing active the components to penetrate substrates and achieve better contact/neutralization</td>
</tr>
<tr>
<td>EasyDECON®</td>
<td>Bleach</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>✓ 1-gallon of foam concentrate can be turned into up to 35-gallons of finished decontamination foam using Intelagard’s application equipment</td>
<td>✓ Bleach + water solutions cannot adhere to horizontal/vertical surfaces – insufficient/ineffective contact time requiring constant rewetting of surfaces</td>
</tr>
<tr>
<td>✓ Can be used as a vapor suppressant</td>
<td>✓ Chlorine concentrations in bleach solutions decrease rapidly, creating a less effective solution</td>
</tr>
<tr>
<td>✓ Can adhere to horizontal and vertical surfaces</td>
<td>✓ Application of water/bleach mixtures typically achieved with large power driven spray systems or unsophisticated hand-help pump sprayers – proper coverage unlikely and inefficient</td>
</tr>
<tr>
<td>✓ Inert in factory packaging and can have a shelf-life of 5 years</td>
<td>✓ Using bleach solution creates excessive runoff for containment and clean up. Water/runoff can create collateral water damages - staining, saturation, even flooding.</td>
</tr>
<tr>
<td>✓ Remains effective for 8-hours once the 3 separate components are combined</td>
<td>✓ Components are pre-portioned to avoid mixing errors</td>
</tr>
<tr>
<td>✓ Intelagard’s simple, highly portable application equipment ensures proper application for optimal results</td>
<td>✓ Independent and Government testing results are available</td>
</tr>
</tbody>
</table>

Bleach is an inexpensive cleaner, but the numerous risks associated with flawed preparation, ineffective application and insufficient contact time far outweigh the advantage of cost and ease of purchase. Combine this with the potential that off the shelf bleach products may be dated or ineffectively stored or transported, and ask yourself if it is worth the risk. Use EasyDECON® DF200 with confidence.

For more information, contact:

[INTELAGARD®](#)

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