SHIPSAN ACT Newsletter.

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In this issue...

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Editorial Dr Mauro Dionisio, Ministry of Health, Italy

Dear Friends and Colleagues,

In this issue I would like to inform you about the SHIPSAN ACT activities of the last two months. After the 1st training course for seafarers, held in Italy at the beginning of October, we have received a lot of positive feedback from trainees. These considerations urge us more and more to consider the need for training which is the real driving force of our Joint Action. Due to the end of the favourable season, many cruise companies have reduced the number of their ships travelling over the European seas. Consequently, SHIPSAN inspections have diminished, now concentrating on ferries until next spring. National dissemination activities continue to proceed as well as the in-depth analysis of occupational health and hygiene in maritime transport. Further, the recognition regarding the different roles, maintained by various Authorities in the European ports, with a view to prepare a 'State of the Art' by Spanish colleagues, will be concluded.

Dear Readers, as this is the last issue of the newsletter for 2013, I would like to send you, on behalf of the SHIPSAN ACT editorial board and the SHIPSAN partners, our best wishes for a Happy Christmas and a very fruitful New Year. Goodbye until the next issue from the Editor.

News from the leadership

In this issue we would like to share with all the readers the most important activities completed by the SHIPSAN ACT Joint Action partnership during 2013.

Current activities requiring the partnership's input

Prof. Christos Hadjichristodoulou, SHIPSAN ACT Joint Action Coordinator
Dr Barbara Mouchtouri, SHIPSAN ACT Joint Action Manager

Partners are kindly requested to facilitate the data collection process within their countries.

SHIPSAN ACT State of the Art

Responsible Partner: National Centre of Epidemiology, Spain

- A working group meeting took place in Madrid, Spain in April 2013 and the first draft of the six questionnaires (identification of authorities dealing with chemical and radiological events, core capacities training needs under IHR 2005, fishing vessels, and management of chemical and radiological events) regarding "State of the art" surveys was designed.
- The State of the art report is under preparation. For infectious diseases 2,977 papers reviewed in PubMed, 320 papers selected. For chemical incidents: 267 papers reviewed in PubMed, 86 papers selected. 2,680 papers reviewed in SCOPUS, 15 selected. For radiological incidents: 624 papers reviewed in PubMed, 45 papers selected. 2,700 papers reviewed in SCOPUS, 6 selected.
- **The six questionnaires (identification of authorities dealing with chemical and radiological events, core capacities training needs under IHR 2005, fishing vessels, and management of chemical and radiological events) were distributed by the work package leader Dr Carmen Varela Martinez to the EU Member States after they were pilot tested in Spain and finalised.**

News from the leadership continued

Occupational health and hygiene in maritime transport

Responsible Partner: Hamburg Port Health Center – Germany, Klaipeda Public Health Centre – Lithuania

The working group meeting was completed and a meeting was conducted in Bilbao, Spain among representatives of the European Agency for Safety and Health at Work and EU SHIPSAN, where it was decided that the OiRA tool (an interactive Risk Assessment – web application developed by the European Agency for Safety and Health at Work (EU-OSHA) will be used to develop the risk assessment tool for occupational health risks per cargo ship type. A memorandum of understanding will be signed between the EU SHIPSAN ACT and European Agency for Safety and Health at Work (EU-OSHA) and is currently under development. Moreover, a training course has been organised on the use of the OiRA software by our partner in Germany and Lithuania in July in Germany. The literature review for the development of the occupational health risk assessment tool has started. **Work package leader Dr Thomas von Munster disseminated the questionnaire for data collection about practices and responsibilities of port health authorities along the inland waterways with a special focus on the rivers Danube and Rhine concerning notification requirements under IHR 2005.**

Inspections and SHIPSAN ACT Information System

Responsible Partner: University of Thessaly-Greece

- A total of 2,922 Ship Sanitation Certificates have been recorded in the SHIPSAN Information System based on the WHO Handbook for ship inspections and issuance of SSCs.
- A total of 50 pilot inspections have been conducted based on the SHIPSAN Manual by port health officers working in SHIPSAN collaborating ports. The former mentioned inspections took place in 22 ports of 13 different European countries with the participation of 91 port health officers.
- The subcontractor started preparations on SHIPSAN Information System upgrade and update. A total of 21 events have been followed up by using the communication network platform.

Training

Responsible Partner: National Institute of Public Health, Ljubljana, Slovenia

The pool of trainers has been finalised with 83 trainers from 20 countries.

The first EU SHIPSAN ACT Joint Action training course was successfully conducted in Tivoli Terme, Rome, Italy from Tuesday 8th to Thursday 10th October 2013. The course was co-organised by the EU SHIPSAN ACT Joint Action and the Italian Ministry of Health.

A total of **29 trainees** participated in the training course:

- 16 seafarers from 6 cruise companies, 1 ferry company and 1 ship management company
- 13 port health officers

Training methods:

Each day of the training course consisted of three different sessions:

- **Theoretical session:** Lectures by internationally recognised, on the subject matter, experts.
- **"European ports" session:** Interactive methods: problem based learning, quizzes, small group discussions, Q&A, question cards, debates, competitions and demonstration. Participants will be working in 5 groups in rotation.
- **Case studies session:** Structured teaching, emphasising the need for good decision making skills. Trainees will be able to identify and analyse specific hygiene problems and then they are going to demonstrate that they can apply the appropriate preventive or control measures and practices in conjunction with ongoing assessment.

News from the leadership continued

The evaluation results of the training course

An evaluation of the training course was conducted using a four-level scale (excellent-good-average-poor).
The level of satisfaction of trainees' daily expectations is shown in Figure 2.

- In the overall course assessment, trainees rated:
  - the course content with good (56.0%) and excellent (44.0%)
  - the course material with good (40.0%) and excellent (60.0%)
  - the relevance to their job with good (32.0%) and excellent (64.0%)
- 100% of the responding trainees said that the course met their expectations and would recommend the training course to others.
- Regarding the "train the trainers" course, trainers rated:
  - the "train the trainers" content with good (14.3%) and excellent (71.4%)
  - the "train the trainers" material with good (28.6%) and excellent (71.4%)
  - enjoyment with good (14.3%) and excellent (85.7%)
  - "European port" session as excellent from more than 66.7% of the trainers in terms of content and trainers and 80% in terms of relevance to job.

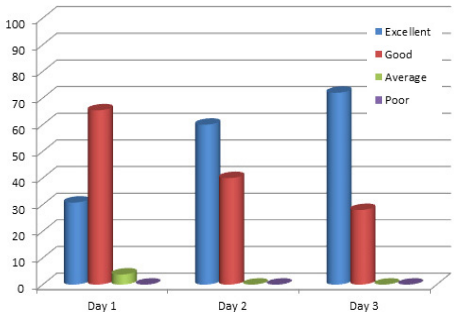


Figure 2: Answers on the question, "How do you feel about the day?"

Coordination, dissemination, evaluation

Responsible Partner: University of Thessaly-Greece, Association of Port Health Authorities-United Kingdom, Ministry of Health-Italy, National School of Public Health-Greece

Figure 1: The EU SHIPSAN ACT banner

The kick off meeting and two meetings of the sustainability working group were completed. The second meeting summary of the sustainability working group published in the News Section of the website. Click here to read the summary. The Chair of the General Assembly was appointed and several meetings with key European and national stakeholders have been completed by the work package leaders.

Regarding dissemination activities, the dissemination plan, a leaflet and a banner (Figure 1) have been prepared and posted on the SHIPSAN website http://www.shipsan.eu/AboutUs.aspx. Moreover, a total of 17 countries out of 23 completed the national dissemination plans identifying means of dissemination of the SHIPSAN ACT activities within their countries. SHIPSAN ACT is currently developing a European directory with the contact details of all European ports authorised to issue Ship Sanitation Certificates under IHR 2005 provided by the partnership. The aim is to create the first European directory of ports authorised to issue Ship Sanitation Certificates under IHR 2005. This directory will facilitate port to port communication, will strengthen the network of port health officers in Europe and will further facilitate communication of the ship with the appropriate port health authorities when desiring to ask for a SSC renewal. A total of 16 countries out of 20 completed the IHR authorised ports contact details.

The evaluation activities completed include the finalisation of the Evaluation plan, a working group meeting related to evaluation took place in Athens, Greece in June where the evaluation methods and tools were discussed. The evaluation of the kick of meeting, working group meeting and training course has been finalised and included in the relevant reports.

Dealing with chemical and radiological incidents on ships

Responsible partner: Public Health England, United Kingdom

A working group meeting was completed. Work has begun on preparing the first draft of the risk assessment document, this include: (a) Familiarisation with maritime/port health requirements (c) Familiarisation with existing national and international requirements/guidance documents (d) Develop a draft outline of the guidance document.

Communication from the Working Group on Inland Navigation

Dear readers of the current issue of the Newsletter-please feel invited for a trip on Germany's inland waterways. See the Rhine, the lovely river Elbe and even the Danube for free. It will not cost you anything except your time. Feel invited to join the crew of the river ships. At: http://www.ms-otrate.de/ you can have a look at the rivers mentioned above via their 24/7 available fine webcam. Look out for the family dog… and more. The river ships also offer a place for parties to take place at onboard. Maybe a good place to celebrate and discuss the results of the questionnaire concerning inland navigation. The Hamburg group is sending these documents out to you in the following days! So – until we meet again enjoy Germanys many rivers and waterways via the river ship webcam! See you!

Yours, Martin Dirksen-Fischer, Hamburg working group.

Thematic Sections

Environmental health and hygiene on ships

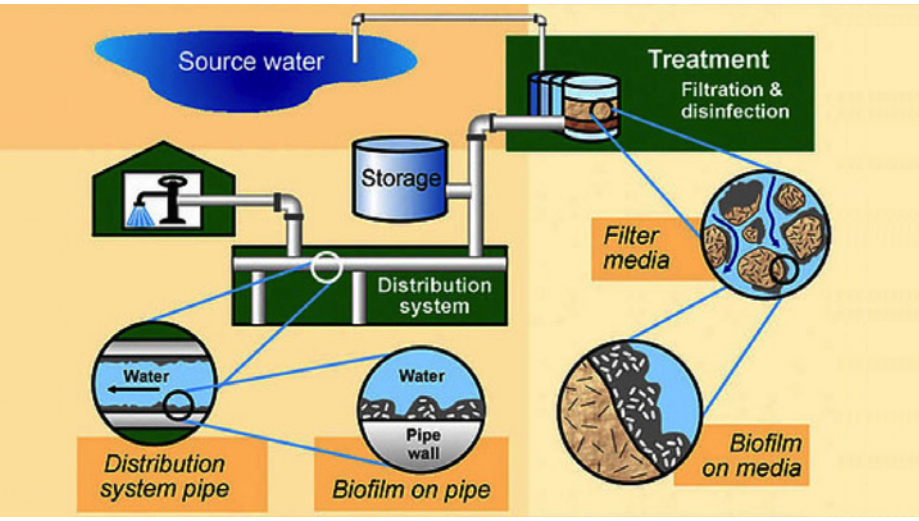
This month we welcome an article from Dr. Maria Elsa Gambuzza. Dr. Gambuzza is a biologist from the Italian Ministry of Health and I would like to thank her for submitting this article about Biofilm Control Strategies. This is an area of particular interest to both shipping companies and port health authorities given the importance of potable water systems and other systems for potential public health risks within vessels. I commend this article to you. As always, comments and points about articles are welcome by the SHIPSAN ACT project and should be submitted to info@shipsan.eu

Biofilm control strategies

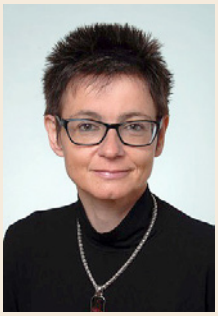
Microbial adhesion to surfaces and biofilm formation occur in many environments, on board ships (potable water systems, water-treatment facilities, air-conditioning equipment). Biofilms represent a protected mode of growth, allowing microorganisms to survive in hostile environments.

Key message:

This section outlines the importance of cleaning and disinfection procedures for biofilm prevention. It also provides examples for using alternative prevention strategies.



People from the project



Dr Nina Pirnat

I completed a study at the medical faculty in Ljubljana in 1990. I became a specialist in epidemiology. I also completed a postgraduate course of hospital hygiene. I have been working for 23 years in various fields of public health.

First I worked at the regional Institute of public health of Ljubljana as an epidemiologist for communicable disease control. I coordinated the vaccination in the Ljubljana region and worked with hospitals as a consultant for nosocomial infections control. Later I led the field of environment and health, such as: food safety, drinking and bathing water safety, pre-school and school hygiene.

In 2004 I started working at National Institute of public health (IPH) as head of Unit for the procurement and distribution of all vaccines in Slovenia. I was a member of the sub-specialised team for safe vaccination. During the Slovenian Presidency of the European Union in 2008, I was Acting Director of IPH. Currently I lead Department for environment and health. Between 2007 and 2012 I actively participated in projects SHIPSAN and SHIPSAN-TRAINET.

Since 2001 I have been voluntary working on the largest Slovenian web health portal www.med.over.net. I am responsible for forums "Travel Medicine", "Vaccination and HPV". I answered more than 20,000 questions »on line«.

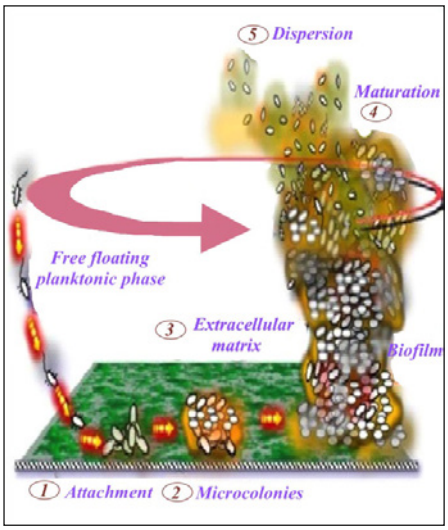
I am very active in sports, a sports runner, president of the Alpine Ski Club Olympia and a member of the Executive Committee of Academic sports Olympia association.

Thematic Sections continued

These bacterial communities are stuck together to a self-produced adhesive matrix of sugars and proteins, that pulls the colonists together and protect them from the outside world.

As the biofilm grows, it attracts other microorganisms, including dangerous pathogens, providing them with numerous appealing anchoring points.

Biofilm development occurs through several key steps: (1) attachment, (2) microcolony formation, (3) extracellular matrix secretion, (4) biofilm maturation, and (5) dispersion which are shown in the figure below:



There is heterogeneity in bacterial activity, chemical microenvironments, and microcolony formation. The aerobic bacteria grow in outer surface exposed to air, whereas the interior portion supports anaerobic microorganisms.

Biofilms can cause many problems including:

- Biofouling and biocorrosion
- Harbourage for dangerous microorganisms
- Difficulties in their removal
- Potential contamination of the water supply
- A tendency to develop on dead-legs of pipework and in low flow areas around the bends in pipework

Biofilm prevention: can biofilm be controlled?

At present there is no valid method for complete biofilm prevention. A continuous chlorine level can help control biofilm, but it can also persist in chlorinated pools. In addition, once formed, it is very difficult to remove the biofilm and keep it away. The main prevention strategy is the **regular cleaning and disinfection,** to prevent bacteria from strongly sticking to surfaces. Most disinfectants are more effective in absence of organic compounds. In addition, temperature, pH, water hardness, chemical inhibitors, concentration and contact time generally affect their effectiveness.

At present there is no valid method for complete biofilm prevention.

Disinfection strategies should achieve the following outcomes:

- Destroy polysaccharide matrix and microorganisms left after cleaning
- Maintain biofilm-free all equipment, inhibiting intermittent biofilm formation
- Maintain or improve the overall quality of the water

Among the oxidising agents, *chlorine dioxide* is known to be more effective and safe, when compared with *chlorine:*

Chlorine

- Ineffective in removing biofilm
- Carcinogens production (e.g., trihalomethanes)
- Corrosive and difficult to handle
- PH dependent activity
- Ineffective against cysts and protozoa
- Minimum residual concentration: 0.2 mg/L
- Contact time: at least 30 minutes

Chlorine dioxide

- Effective in removing biofilm
- No chlorinated by-product production
- Less corrosive
- No pH dependent activity
- Effective against a broad spectrum of microorganisms
- Minimum residual concentration: 0.05 mg/L
- Contact time: at least 15 minutes

However, to be effective, chlorine dioxide concentration should be at least 0.1 mg/L and should not exceed 0.8 mg/L (according to Environment Protection Agency), and 0.8 mg/L might not be enough to kill completely Legionella. Therefore, it may be necessary to use it at a higher concentration (maybe at 1-2 mg/L) and to provide alternative sources of potable water until Legionellae spp. are shown to be under control.

Bio-enzymatic cleaners, also known as *"green chemicals",* or *enzyme-based detergents,* containing enzymes able to destroy protein-polysaccharide complexes, could contribute to biofilm degradation.

Effective cleaning and sanification protocols are described in **Chapters 4-5 EU Manual Hygiene Standards and Communicable Diseases Surveillance on Passenger Ships – EU-Comm-2011** http://www.shipsan.eu/page.php?=27&item=33

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Pictures modified by original pictures: http://www.montana.edu.

Next Issue:

This will feature the risks associated with ECOLI-0157 in food preparation.

As always, further articles from anyone associated with the SHIPSAN ACT project will be gratefully received for the Environmental Health and Hygiene section and can be sent to me at martin.walker@suffolkcoastal.gov.uk

Thematic Sections continued

Infectious diseases on ships

Actions for the prevention of cryptosporidium outbreaks on ships

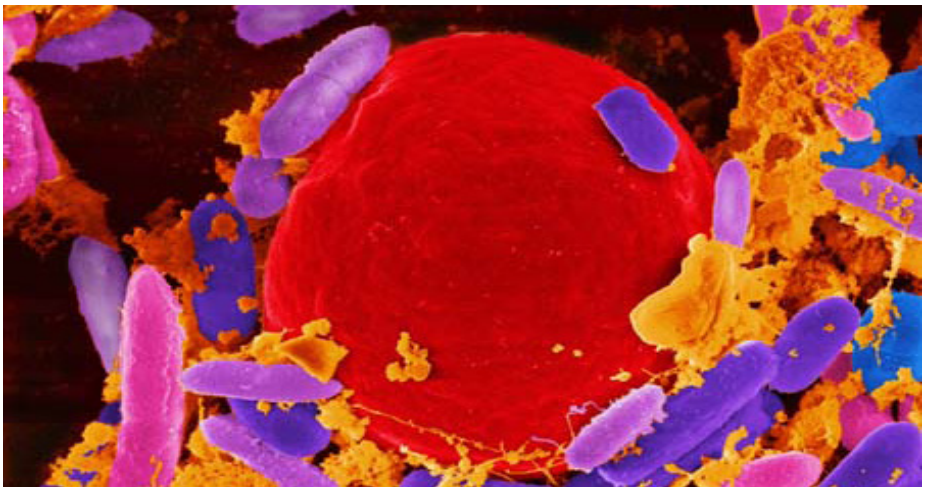
Eva Grilc, M.D., Spec. of Public Health, Master Degree of Public Health, National Institute of Public Health of Slovenia (NIPH)

I.1 Introduction. A variety of pathogens can cause gastrointestinal illness on ships (1). Cryptosporidiosis is a diarrhoeal disease caused by several ***Cryptosporidium*** species, and diagnosis and surveillance for this pathogen in different EU Member States is somewhat variable. Studies of the burden of intestinal infectious diseases in both developed countries (2) suggests that cryptosporidiosis is an important cause of morbidity and in developing countries can contribute to child mortality (3). They belong to protozoan parasites which are the third most common cause of emerging infectious diseases (EID) attributing to 10.7% of EID events over the last 64 years (4). Globally at least 325 water-associated outbreaks of parasitic protozoan diseases have been reported. North American and European outbreaks accounted for 93% of all reports. ***Giardia duodenalis*** and ***Cryptosporidium parvum*** account for the majority of outbreaks (132; 40.6% and 165; 50.8%, respectively) (5).

Although cryptosporidiosis has been a major cause of waterborne outbreaks in land based premises, largely as a result of the resistance of these pathogens to chlorination, during the last 40 years only two outbreaks have been documented in the literature related to ships. The most plausible reason for this is that people become ill after they have finished their cruise and cases are not linked (and in most cases not diagnosed). The two outbreaks are outlined below:

Outbreak 1. At the end of March 1993 a widespread outbreak of acute watery diarrhoea among the residents of Milwaukee was notified. There were marked increases in the turbidity of treated water at the city's southern water-treatment plant, *Cryptosporidium* oocysts were identified in water (6). About 403 000 people had diarrhoea attributable to this outbreak and it was the largest waterborne disease outbreak documented in United States history. During almost the same period a *Cryptosporidium* outbreak on a ship was recorded as well. The ship filled its water tanks with contaminated untreated water in Milwaukee. Confirmed cases on the ship consumed significantly more water aboard than non-cases (6,7).

Outbreak 2. An outbreak associated with a dinner cruise on Lake Michigan occurred in 2012 (8). The outbreak followed heavy rainfall with a lot of rainwater and storm runoff containing diluted sewage being released into the lake. Of 72 cruise participants, 41 (57%) reported gastroenteritis. Stool specimens were positive for *Shigella sonnei* (n=3), *Giardia lamblia* (n=3), and *Cryptosporidium* (n=2).



Ice consumption was associated with illness (risk ratio 2·2, p=0·011) but only *Shigella sonnei* was isolated from a swab obtained from the one of the boat's ice bins (8). The vehicle of infection was probable contaminated hose used to load potable water onto the boat (7). Another study also showed that the concentration of *Cryptosporidium* oocysts increases in drinking and surface water sources after heavy rainfall due to runoff (9).

The reasons for the limited number of outbreaks could also be attributed to the: measures applied on ships to prevent faecal contamination of portable water and the measures applied in recreational water facilities. Each ship must have systems and controls for the provision of safe water which is included in Water Safety Plan (WSP) (10). The WSP has many of the principles of other risk assessment approaches like HACCP and the multi-barrier approach (hurdle technology)(10). WSP encompasses comprehensive risk assessment and management approach that includes all steps in water supply from source to consumer (10). The main measures are: the sea water which is usually used on ships is filtered. Risk assessment is performed to ensure that the water used on a ship is of appropriate quality. There are routine checks for faecal indicators in the water system of ships including water before bunkering from ports and at different points of the water distribution system of the ship to the end-consumer.

All potential events or situations that could lead to the presence of a hazard should be identified and listed. Water can be contaminated from bunkered water from a potable supply, during bunkering/loading, later due to faecal contamination, also accidents at pools etc. (10).

All identified hazardous events are considered and managed according to two criteria: the probability that it will occur (likelihood) and the likely consequences (10). All control measures for significant

Thematic Sections continued

hazards must be assessed and recorded also on the flow diagram/table (10).

Control measures include water treatment procedures, routine monitoring and inspections, maintenance, repair or replacement of equipment, cross connection control, labelling of pipes, hoses, regular temperature controls and flushing of infrequently used equipment, last but not least training of the crew (10).

Finally there are some difficulties in linking *Cryptosporidium* outbreaks with ships in spite of the fact that the infectious dose is low. Median infectious dose was estimated to be 300 oocysts for humans (11), which could mean that infections are not so rare. But as cryptosporidiosis has incubation period from 1 to 12 days ill travellers may have disembarked when they develop symptoms. Besides asymptomatic infections are common (12).

A broad global review of available reports of outbreaks of waterborne disease acquired by ingestion from January 1, 1970, to June 30, 2003, and associated with different kinds of ships are included in the report of WHO, table 1 (1).

Table 1: Pathogens and toxins linked to global outbreaks of waterborne disease associated with ships, January 1st, 1970-June 30th, 2003 (1).

Organism/ toxin	Organism/ toxin outbreaks	Number of passengers and crew members affected
Enterotoxigenic *Escherichia coli*	7	2,917
Norovirus	3	788
Salmonella Typhi	1	83
Salmonella spp.	1	292
Shigella spp.	1	690
**Cryptosporidium* spp.	1	42
Giardia lamblia	1	200
Unknown agent	5	849
Chemical water poisoning	1	544
Total	**22**	**6,405**

Source: World Health Organisation Guide to ship sanitation (third edition) http://www.who.int/water_sanitation_health/publications/2011/ship_sanitation_guide/en/

IV.1 Conclusion

Although there have been few outbreaks of cryptosporidiosis related to passenger ships there is little reason to be complacent about the risks. The most likely sources for contamination are contaminated mains water that is bunkered, and contamination of water during bunkering as a result of contaminated hoses. The main protections against these possibilities are to ensure good source water quality checks and proper hose hygiene, and these should be implemented as part of ship's Water Safety Plans. These should be checked at regular intervals by port authorities, who should also ensure that the supplying water utility undertakes regular water quality tests for *Cryptosporidium*. Ship's crew should also be aware of the potential for *Cryptosporidium* to cause waterborne outbreaks.

V. Sources:

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Thematic Sections continued

Chemical and radiological issues on ships

Representatives from the SHIPSAN project team based in Public Health England (PHE) attended and presented at the ARCOPOL plus (+) conference, which was held in Cardiff on 11-12 September 2013. The ARCOPOL + (Atlantic Regions' Coastal Pollution Response+) is a 24 month European funded project which ends in December 2013. The project aims to improve maritime safety by improving local and regional preparedness and response to oil and hazardous and noxious substance (HNS) spills in the Atlantic region through the transfer of technology, training and innovation.

The ARCOPOL project partnership is made up of countries within the Atlantic coastline and Europe such as the UK, Ireland, Portugal and Spain. The ARCOPOL+ builds on the previous ARCOPOL project (2009-2011) which focused on establishing an Atlantic network of experts to improve the exchange of information, data and management tools to improve the capabilities of first responders in dealing with maritime incidents.

Dr Ehi Idahosa-Taylor presented the work of the SHIPSAN Joint Actions project on the second day of this international conference, which was aimed at local authorities, policy makers, environmental scientists, emergency planners and coastguards. She provided delegates with an overview of the project and in particular the work to develop guidance to support risk assessment and response for managing chemical and radiological incidents on ships. This included providing examples of chemical and radiological events that have the potential to impact on public health.

Key message:

The Centre for Radiation, Chemical and Environmental Hazards (CRCE) of Public Health England (PHE) has the responsibility to develop best practice guidance for competent authorities to support risk assessment and response for managing chemical and radiological incidents on ships where passengers or cargo may be affected and where there is a need to protect public health.

Several ARCOPOL+ project partners presented at the conference to provide delegates with an insight into work that has been undertaken to assist local responders in their preparedness and response to incidents involving oil and Hazardous Noxious Substances spill as well as work carried out to build community resilience in coastal communities that have been affected by marine pollution incidents. Key elements included stakeholder engagement programmes and the provision of training courses to communities in affected regions. It was very interesting to hear directly from some of the project partners who have developed region specific response networks to deal with chemical or HNS incidents and to learn about how these networks operate in practice.

The PHE SHIPSAN team would like to thank the ARCOPOL+ project for the invitation to present the work of the SHIPSAN project and for the opportunity to attend the conference. Further information about the ARCOPOL + project can be obtained from www.arcopol.eu.

Recent publications

Inactivation of Norovirus on Dry Copper Alloy Surfaces

Warnes SL, Keevil
CW (2013) PLoS ONE 8(9): e75017. doi:10.1371/journal.pone.0075017

Abstract

Noroviruses (family Caliciviridae) are the primary cause of viral gastroenteritis worldwide. The virus is highly infectious and touching contaminated surfaces can contribute to infection spread. Although the virus was identified over 40 years ago the lack of methods to assess infectivity has hampered the study of the human pathogen. Recently the murine virus, MNV-1, has successfully been used as a close surrogate. Copper alloys have previously been shown to be effective antimicrobial surfaces against a range of bacteria and fungi. We now report rapid inactivation of murine norovirus on alloys, containing over 60% copper, at room temperature but no reduction of infectivity on stainless steel dry surfaces in simulated wet fomite and dry touch contamination. The rate of inactivation was initially very rapid and proportional to copper content of alloy tested. Viral inactivation was not as rapid on brass as previously observed for bacteria but copper-nickel alloy was very effective. The use of chelators and quenchers of reactive oxygen species (ROS) determined that Cu(II) and especially Cu(I) ions are still the primary effectors of toxicity but quenching superoxide and hydroxyl radicals did not confer protection. This suggests Fenton generation of ROS is not important for the inactivation mechanism. One of the targets of copper toxicity was the viral genome and a reduced copy number of the gene for a viral encoded protein, VPg (viral-protein-genome-linked), which is essential for infectivity, was observed following contact with copper and brass dry surfaces. The use of antimicrobial surfaces containing copper in high risk closed environments such as cruise ships and care facilities could help to reduce the spread of this highly infectious and costly pathogen.

Microfiber and steam for environmental cleaning during an outbreak

Abernethy, M., Gillespie, E., Snook, K., Stuart, R.L.
American Journal of Infection Control, Volume 41, Issue 11, November 2013, Pages 1,134-1,135

Abstract

We report an outbreak of norovirus gastroenteritis occurring concurrently over two wards. Environmental cleaning was managed using two different methodologies: one ward utilised the traditional 2-step method, the other using microfiber-steam technology. Environmental cleaning using the microfiber-steam technology proved to be an effective and efficient cleaning methodology, appropriate for use during an outbreak situation.

Contact Killing of Bacteria on Copper Is Suppressed if Bacterial-Metal Contact Is Prevented and Is Induced on Iron by Copper Ions

Salima Mathews, Michael Hans, Frank Mücklich and Marc Solioz
Applied and Environmental Microbiology, Volume 79, Issue 8, April 2013, Pages 2,605-2,611

Abstract

Bacteria are rapidly killed on copper surfaces, and copper ions released from the surface have been proposed to play a major role in the killing process. However, it has remained unclear whether contact of the bacteria with the copper surface is also an important factor. Using laser interference lithography, we engineered copper surfaces which were covered with a grid of an inert polymer which prevented contact of the bacteria with the surface. Using Enterococcus hirae as a model organism, we showed that the release of ionic copper from these modified surfaces was not significantly reduced. In contrast, killing of bacteria was strongly attenuated. When E. hirae cells were exposed to a solid iron surface, the loss of cell viability was the same as on glass. However, exposing cells to iron in the presence of 4 mM CuSO4 led to complete killing in 100 min. These experiments suggest that contact killing proceeds by a mechanism whereby the metal-bacterial contact damages the cell envelope, which, in turn, makes the cells susceptible to further damage by copper ions.

News and forthcoming dates

EU SHIPSAN ACT Training Course

Inspection of Hygiene & Health Standards on Passenger Ships

A training course for port health officers and professional seafarers

Wednesday 5th March 2014 - Friday 7th March 2014

Training and accommodation venue: a cruise ship docked at the port of Piraeus, Athens, Greece

Course Organiser: EU SHIPSAN ACT Joint Action

Course duration: 3 days

The EU SHIPSAN ACT training course entitled "Inspection of hygiene & health standards on passenger ships" is designed for port health officers and professional seafarers and aims at familiarising the port health authorities personnel and the passenger ship industry with the inspection of hygiene and health standards on passenger ships as detailed in the 'SHIPSAN European Manual for Hygiene Standards and Communicable Diseases Surveillance on Passenger Ships'.

During the training course certain activities will be common for the two target groups but specific sessions will also be designed.

Training fees for industry participants: 500 Euro
(covering training material for the face-to-face course, coffee breaks, lunch and dinner for 3 days and a CD-ROM with the e-learning modules).

Please click here to complete the application form
(for industry participants only)

Port health officers will be assigned by European Member States.

For further information, please contact **info@shipsan.eu**

Course learning objectives

For port health officers

- To perform inspections based on the standards of the EU SHIPSAN manual by applying inspection principles and techniques on passenger ships.
- To respond to public health events effectively and proportionally to the risks.
- To practice professional attributes required by an inspector.

For professional seafarers

- To apply the standards of the SHIPSAN manual.
- To apply public health risk assessment as part of the everyday duties.
- To demonstrate knowledge on hygiene aspects and communicable diseases control on ships as required in the European Union.

Key points: *What this training course will address?*

1. The International Health Regulations (2005) legal framework for competent authorities at ports and for ship operators.
2. The EU legislation for reporting formalities – Maritime Declaration of Health
3. Responding to public health events on passenger ships.
4. How to design a water safety plan (industry participants).
5. How to audit a water safety plan (port health officers).
6. How to audit management policies and plans on the ship to prevent, respond and control infectious diseases.
7. How to collect and analyse/assess information through observation, interviews and review of records and documents during the inspection (port health officers).
8. How to assess hazards and hazardous events related to food, water, hygiene condition of the ship including housekeeping and infection control issues, communicable diseases, vectors, waste, ballast water, air handling, and medical facilities.
9. Communication skills: adapting communication style and content so they are appropriate to the needs of the intended audience (port health officers).
10. How to write and prepare inspection report according to guidelines set (objective descriptions of findings, correct terminology etc.) – port health officers.

News and forthcoming dates continued

EU SHIPSAN ACT Joint Action was presented at the APHA Conference 2013

By Mrs Andrea Smith, Deputy Chief Port Health Officer, Manchester Port Health Authority, England

In September 2013, I was asked to provide a presentation to the Association of Port Health Authorities Annual Conference in Newquay, Cornwall. The theme of this years' conference was 'shared resources' and as part of this I was asked to talk about the SHIPSAN ACT Joint Action. Due to the size of the Joint Action and the number of work packages to be delivered, I was daunted at the prospect and a little concerned that I would not be able to do the Joint Action justice. However, I was soon to find out that as part of the Joint Action a presentation had been produced for use at conferences such as this.

The presentation was clear, easy to follow and comprehensive and enabled to me to cover all aspects of the project in a logical manner whilst not taking a significant period of time to write.

The presentation was delivered on the first day of the three day conference and was well received by the audience who asked a number of questions. Discussions held after the presentation revealed that it had highlighted a number of aspects of the Joint Action which delegates were not aware of. This in turn led to expressions of interest and support from several delegates who had significant experience of many aspects of the work involved in the Joint Action.

The presentation was followed by 'SHIPSAN from an Industry Perspective' delivered by Gareth Davies, Carnival UK, who talked about the positives of such projects and the pitfalls to be avoided.

The agenda of the meeting is available for download here.

Quiz

What is the name of the cruise ship shown in the picture that was launched in June 1900 and why is this ship famous?

Please send your answers to: info@shipsan.eu

Answer to Issue 4 Quiz:

SATURDAY – The Scandinavian word for Saturday: "Lördag/Lørdag" (Swedish/Danish and Norwegian) reflects the Vikings disposedness to hygiene. The Norse ancestor "Laugardagur" means bathing day.

Congratulations to:
Per Follin, Regional Medical Officer, Department of Communicable Disease Control and Prevention, Region Västra Götaland, Gothenburg, Sweden and **Mario Cassar,** Senior Principal Environmental Health Officer (Reg. No. 047), Units & Legislation, Environmental Health Directorate, Health Inspectorate Services, Malta

What's new on the website?

www.shipsan.eu

In the EU SHIPSAN ACT Joint Action public area you will be able to find updated information on the projects activities(training, inspections, fishing vessels, chemicals, inland), publications, downloadable material (SHIPSAN manual and WHO Handbook) as well as links to the SHIPSAN ACT e-learning platform, SHIPSAN information systems. Do not forget to check the news section for latest activities of the SHIPSAN ACT Joint Action partnership.

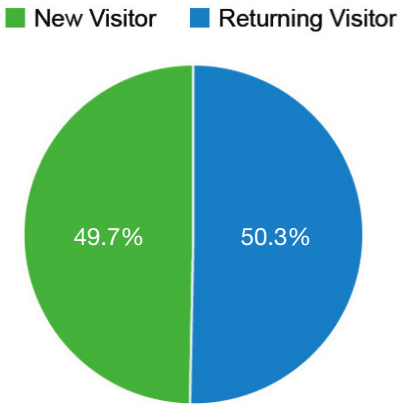
In the Members Area, the associated and collaborating partners can find important information such as:

- Management reports keeping the associated and collaborating partners informed about the progress of the project.
- Information on the deliverables, meetings, training courses etc
- External Dissemination Communication Form.
- Downloadable material
- Templates
- Forum
- Wiki

Website statistics

for the first three months of the new SHIPSAN ACT website (1st August-30th October 2013)

Visits: 1,914 **Visitors: 1,068**



Port in focus

Málaga

Dr. Miguel Dávila-Cornejo, Ministry of Health, Social Services and Equality, Spain
Ms. Carmen Varela-Martínez, National Centre of Epidemiology, Spain

The Port of Málaga is an international seaport located in the south of Spain on the Costa del Sol. It's the oldest continuously-operated port in Spain and one of the oldest in the Mediterranean. Principal port activities include cruise shipping and the importation of containerised manufactured products, general cargo and vehicles. A small fishing fleet also operates from the port.

The port of Málaga was founded by the Phoenicians towards the 10th century B.C., establishing a colony to trade with the natives. During the Romanisation period, traffic in the port increased, with ships leaving to Rome loaded with ceramics, wine, oil and fish. During the Muslim age, the port of Málaga turned into the gate-way to the Kingdom of Granada as well as into a link between the Mediterranean, the Atlantic Ocean and the North Sea. In the 1920s, an extensive reconstruction of port facilities resulted in the modernisation of the existing quays and the completion of the passenger terminal. At the end of the 90s the Special Plan of the Port was pre-sented, which will mean new urban spaces for the city. The Port of Málaga enters the 21st. Century undertaking a modernisation of its facilities and creating new spaces.

The Port of Málaga has been tradition-ally an importing port, although that trend has been changing over the years. It can be highlighted the importing of cements and cereals and the exporting of dolomite and food products.

Málaga is the second most important cruise ship port in Spain as shown by the regular presence of the world's leading cruise lines. This traffic has increased over the last years. 2012 was closed with 651,517 cruise passengers and the regular ferry line between Málaga and Melilla (North Africa) moves around 249,177 passengers. Therefore, more than 900,000 passengers travel to, from or through the port.

One of the priority objectives of the port is the promotion in cruise traffic, which will facilitate its consolidation as one of the most relevant Mediterra-nean base ports. The port has the best infrastructures for berthing of cruises and it's prepared to receive the largest megaships. The new Cruise Terminal is equipped with modern facilities and it is capable of managing the flow of one million passengers. A commercial marina will also operate for super yachts up to 30 meters and a Fish Market can be found on the fishing port wharves.

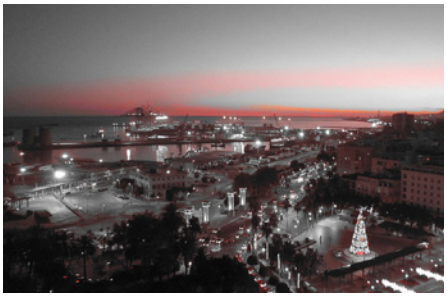
Under the Special Plan of the Port of Málaga, which aims to bring the city and its port closer to each other, the Port of Málaga has given the necessary space to create new urban premises devoted to leisure and cultural activities. Cruise pas-sengers can easily reach the old town on foot, since it is the closest area to the city.

We must emphasise that the Port of Málaga has a Foreign Health Unit per-fectly well prepared to conduct ship inspections as well as to respond to pub-lic health emergencies on board ships. Its staff has been collaborating actively with SHIPSAN for the latest years.

References

Puerto de Málaga. Autoridad Portuaria de Málaga. Available at: http://www.puertomalaga.com/web/guest/home

Port of Málaga. From Wikipedia, the Free Encyclopedia. Available at: http://en.wikipedia.org/wiki/Port_of_M%C3%A1laga.



Photos by Mrs Elena Plaza, Ministry of Health, Málaga, Spain