

In pop culture and forensic practice well-known method of misleading investigators is washing bloodstains from a crime scene. In this situation forensic chemistry will be helpful, it will help to visualise bloodstain that is invisible by a human eye. By this method investigators can find even a microscopic trace of blood. This scenario is so prevalent in forensic and pop culture filed that at this point it is hard to imagine how this kind of stains can be created in another way then being washed.

But logic shows that it is possible that person who had contact with human blood will leave an unseen trace on a surface — stains that are visible only after when they react with chemical reagents. This kind of trace can be left in a passive way or inadvertent, for example when a person will touch by bloody hand nearby wall. It is possible that stains visible by chemiluminescence are created by passive way expert will see as washed stains. In this scenario person who left them will have serious criminal law consequences.

Forensic sciences know very well bloodstain pattern analysis that can reconstruct event based on bloodstains. Scientific literature is focusing on visible stains, that can be spotted by the human eye or under a microscope. There hasn't been any research focusing on categorising stains that have been visualised by chemical reactions and making conclusions from this kind of stains. This project will change it.

The final result of this project will be the new detailed methodology that covers visualisation, documentation and analysis stains visible by chemiluminescence in term of distinguishing washed stains from passive ones.

This goal will be reached by using the full spectre of scientific methods in this project. There will be national and international surveys focusing on the practical approach of chemiluminescence on a crime scene by institutions and experts. Based on this data it will be possible to compare and analyse numerous ideas and ways of work on crime scenes, all around the world. Vast national case research will be also conducted during this project. Meta-analysis will be done on criminal case files that will focus on documentation and expert conclusions based on the chemiluminescent effect on a crime scene. It will help to understand today's practice in this field better.

After that, there will be conducted numerous simulations included using different surfaces on which there will be different bloodstains which will be enhancement by chemiluminescence. Different techniques will deposit chemical reagent. What is innovative is that the project will cover unseen chemical distribution technique. In simulation projected in this way, it will be possible to research the different factor that will influence enhanced stain. This will give an opportunity to discover dependence and characteristics of a different category of stains, that at this moment have not been researched.

The new methodology will be validated. Blind simulations will be conducted, during which volunteers will create bloodstains, washed and passive. Other people will use the new methodology to determine how those stains enhanced by chemiluminescence were made or how those stains wasn't created. Results of this experiment will be compared with a result on another survey that will be done among international experts about same stains, but during questionnaire, experts will use "old practice" that is based more on the experience of experts than scientific facts, in term of stains visualised by chemiluminescence.

Results of the project will be publicised in international forensic science journals.

Methodology done in this way could be used by police and experts in Poland and international. This project can show that over-interpretation of bloodstains enhanced by chemiluminescence effect can be the massive problem for injustice system. Also, the new methodology that will be based on scientific fact can be an answer to this over-interpretation problem. Issues that will be tackled by the project are not broad or popular, but there are very important and have a significant influence on human life. No one wants to be accused and condemn, based on evidence from a forensic expert who say this trace is glowing because it was washed, when in fact this stain was created passively.