Iodine fuming is a method for developing latent prints on porous surfaces. In the process, iodine gas preferentially adheres to the oils of the latent fingerprints and turns them an amber color. This color change is what enables one to visualize the latent prints.

Unfortunately, prints processed with iodine fuming fade rapidly and require further processing or re-fuming with iodine to be visualized. Recognizing this problem as a major flaw with iodine fuming, methods have been developed to prolong the visible life of iodine-fumed latent prints. Some of those methods include post-treatment of iodine-fumed prints with tetrabase, 7,8-benzoflavone, starch, steam, or water. These methods have achieved varying degrees of success. This author was trained to fix iodine-fumed latent prints by treating them with water. The result of this application is the conversion from the amber color of the latent prints to indigo, which has the added advantage of increasing the contrast between the prints and the substrate. There are two methods used to fix the iodine-fumed latent prints. One method involves adding water droplets onto the latent print from a dropper and allowing the water to run off the surface. The other method is to dab the latent print with a moistened paper towel until it appears indigo in color. When performing this technique in the past, issues occurred with the misapplication of the water to the iodine-fumed latent print.

These two methods offer little to no control with respect to the quantity of water added to the latent print and the degree of absorption of that water into the porous substrate. If too much water is added to the iodine-fumed latent print by the drop method, the absorption of the excess water into the substrate can obliterate the detail by blending the friction ridge pattern into a single indiscriminate shape. The resulting latent print retains no evidentiary value, since the friction ridge detail is not discernible and the print is no longer recoverable. In effect, this result is even more detrimental to the evidence than not fixing the latent print in the first place.

The dabbing method of fixing iodine-fumed latent prints is significantly better than the drop method, but it also suffers from some of the same drawbacks. If the paper towel used to dab the latent print is too wet, then too much excess water can be absorbed into the substrate and obliterate the latent print in the same manner as before. Furthermore, the interaction of the paper towel with the substrate caused by the pressure applied is not ideal since it can generate an uneven distribution of water on the latent print, potentially causing the non-uniform fixing of the latent print. Whenever possible, it is best to eliminate physical interaction with the evidence, especially if that interaction can damage the evidence.

The proposed humidification method of fixing iodine-fumed latent prints also involves the use of water, but it eliminates the flaws of the previously discussed two methods. This method operates by hydrating the iodine-fumed latent prints without harsh physical interaction with a paper towel or the addition of excess moisture into the substrate. Humidification slowly and evenly adds a consistent amount of moisture to the latent prints in a controllable manner. The amount of time the evidence with iodine-fumed latent prints is left in the humidifier can be monitored and controlled at the individual’s discretion. This method also hydrates the latent print uniformly, thereby eliminating unfixed regions in the latent print that are often seen with the dabbing method.

If a humidifier is unavailable, a makeshift humidification system can be created using an incubator. With the temperature set to 33 degrees Celsius, a moist paper towel is placed on the incubator rack. The item possessing the iodine-fumed latent print is placed on the paper towel, making sure the side with the latent print is facing up and not in direct contact with the paper towel. A seal was then created around the latent print by covering it with a beaker to trap the evaporated moisture. The beaker should be large enough so that it extends around the entire surface containing the latent print but not too large that it extends over the moist paper towel, which would allow the evaporated water to escape. Other lab equipment can be used to create the seal and creativity may be required to find the object of the appropriate size. A beaker is useful since it is transparent and one can observe the color change from amber to indigo, indicating that the fixing process is complete. Typically, and under these conditions, leaving the item in the humidifier for 3-5 minutes is sufficient to adequately humidify and fix them. Once fixed and dry, the iodine-fumed latent print can be covered with fingerprint lifting tape to assist in prolonging its lifespan. Taping the latent print removes direct contact with the environment and has been shown to extend...
its visibility when compared to a latent print that has not been taped.

This author has found that the results obtained from the humidification method of fixing iodine-fumed latent prints are superior when compared to the other two methods of water-based fixing. The advantages of using this method is in the amount of control the individual has over the variables involved and the absence of physical interaction with the evidence. The results obtained from this method of fixing iodine-fumed latent prints, however, are not permanent, and they may fade over time (figures 1 & 2). Fading initially occurs in the background of the fingerprint, which actually enhances the contrast between the latent print and the substrate. However, after approximately one month in storage, the friction ridge detail did not suffer from any noticeable degradation. The color of the latent print began to revert back to the pre-fixed amber color, which may be due to the evaporation of the water through the back of the substrate. Taping the latent print with fingerprint lifting tape may also contribute to the increased lifespan and should not go unnoticed. It can be said, therefore, that this method of fixing an iodine-fumed latent print does effectively prolong the visibility of the latent print. *

REFERENCES