F49 A Review of the Literature Concerning Radiation Safety Features of the Nomad™ Portable Hand-Held Dental Radiation Emitting Device

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After attending this presentation, attendees will be able to understand the current literature regarding the radiation-emitting characteristics of the Nomad™, compare and contrast the results of the various independent studies concerning radiation safety for the Nomad™, and evaluate the consistency and validity of the various independent studies to determine for themselves the operational safety for the device.

This presentation will impact the forensic science community by clarifying why the Nomad has proven to be a valuable tool for the forensic odontologist. The Nomad™ presents many possibilities in dentistry and other fields of science and industry. However, State Radiation Safety Authorities have been reluctant to allow the use of the Nomad™. This presentation will allow the profession to evaluate the safety of the device to encourage its broader use in dentsitry and other professions.

The Nomad™ portable hand-held dental radiation emitting device, developed in 2004 and approved as a medical device by the FDA in 2005, and has since its introduction, been used almost exclusively in the resolution of mass fatality incidents (MFIs) requiring forensic dental identification of numerous victims. Thus, radiological assistance provided by this device is generally acknowledged among forensic specialists and units have become standard components of the prepositioned armamentarium supporting the mission of Federal Disaster Mortuary Operational Response Teams (DMORTs) in the United States and their counterparts internationally.

Since the introduction of the Nomad™ unit, a body of research that has analyzed and measured scatter radiation control capabilities and radiation shielding characteristics of this portable hand-held dental radiation emitting device has evolved. With the information provided in this review of that literature, forensic odontologists, general dental practitioners, and those in other disciplines, seeking to employ the Nomad™ device, will have access to a broad knowledge base related to the radiation safety parameters of the Nomad™ unit. Analysis of the radiation safety aspects that have been incorporated into the Nomad™ portable hand-held dental radiation emitting device will be stressed. These features have been shown in previous studies to offer protection to the operator of the Nomad™ device as well as the patient, attending staff personnel and bystanders.

Therefore, it is the purpose of this report to review and collate information from studies which have evaluated radiation safety factors associated with use of the Nomad™ unit. By distilling and summarizing this information, the presentation will impact the forensic community and/or humanity by serving as a single reference which will facilitate dissemination of this knowledge to forensic dentists, general dental practitioners and other experts who may be asked to use the Nomad™ device in dental setting or in other fields of practice (veterinary medicine, physical anthropology, surgery). This will permit those who utilize the Nomad™ instrument to make decisions based on evidence in the literature regarding their need or choice to use additional radiation protective and monitoring devices, such as lead aprons and dosimeters, while operating the machine.

Additionally, although the NOMAD™ unit has been used successfully, since its introduction in the situations described previously; in the United States, use of these portable radiation emitting instruments in private dental offices and/or clinics, or by other professionals, has been hindered by individual state radiation safety laws. If these restrictive policies are to change, state radiation safety officers in the United States and similar officials internationally, can utilize the information in this presentation when determining future policies related to the use of these devices within their jurisdictions

Forensic Science, Portable Radiation Emitting Device, Radiation Safety

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